

# B<sup>2</sup>USINESS HORIZONS

SUMMER, 1959

VOL. 2, NO. 2

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## *Contents*

TOWARD ECONOMIC FREEDOM—A PLAN FOR COPING  
WITH BIGNESS

*George Romney*

URBAN GROWTH IN THE NEXT 15 YEARS

*Homer Hoyt*

OUR GROWING POPULATION: THREAT OR BOON?

*George J. Stoltz*

CAN LIFE INSURANCE ADJUST TO INFLATION?

*F. J. McDiarmid*

THE ARGUMENT FOR SELECTIVE CREDIT EASE

*Leo Fishman*

PROPOSAL FOR A NORTH AMERICAN COMMON MARKET

*William H. Peterson*

DEPRECIATION REFORM: WHAT DOES BUSINESS WANT?

*Ray M. Powell*

DEPRECIATION REFORM: CURE FOR RECESSIONS?

*Donald F. Istvan*

TEACHING EXECUTIVES VIA SIMULATION

*E. W. Martin, Jr.*

HORIZONS CONSULTATION: ARE PROFITS AND SOCIAL  
RESPONSIBILITIES COMPATIBLE?

*D. Mead Johnson, Herman C. Nolen, Harold F. Smiddy,  
Charles M. Hewitt*



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- 21 TOWARD ECONOMIC FREEDOM—A PLAN FOR COPING WITH BIGNESS / *George Romney*
- 29 URBAN GROWTH IN THE NEXT 15 YEARS / *Homer Hoyt*
- 37 OUR GROWING POPULATION: THREAT OR BOON? / *George J. Stoltz*
- 46 CAN LIFE INSURANCE ADJUST TO INFLATION? / *F. J. McDiarmid*
- 65 THE ARGUMENT FOR SELECTIVE CREDIT EASE / *Leo Fishman*

## BUSINESS HORIZONS

SUMMER 1959 | VOL. 2 NO. 2

- 73 PROPOSAL FOR A NORTH AMERICAN COMMON MARKET / *William H. Peterson*
- 81 DEPRECIATION REFORM: WHAT DOES BUSINESS WANT? / *Ray M. Powell*
- 90 DEPRECIATION REFORM: CURE FOR RECESSIONS? / *Donald F. Istvan*
- 100 TEACHING EXECUTIVES VIA SIMULATION / *E. W. Martin, Jr.*

### 4 PROFILES OF THE FUTURE

### 10 COMMENTS FROM OUR READERS

### FEATURES

### 54 CONSULTATION

### 110 TECHNOLOGICAL HORIZONS

### 114 BOOK NOTES

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Entered as second-class matter at Bloomington, Indiana. Additional office of entry at St. Louis, Missouri. RATES: \$2.00 per copy, \$6.50 one year, \$12.00 three years. Make checks payable to BUSINESS HORIZONS. Reprints of articles are available. Information and prices upon request. Address all correspondence, including advertising materials and inquiries, to BUSINESS HORIZONS, School of Business, Indiana University, Bloomington, Indiana. Telephone EDison 6-6811, extension 789.

PRINTED IN U.S.A.

Chairman and President of American Motors Corporation, Mr. Romney has held many important positions in business and government. Widely recognized for his contributions, he was honored by the Associated Press as "Industry Man of the Year" in 1958.

HOMER HOYT

Homer Hoyt is President of Homer Hoyt Associates, a real estate consulting firm in Washington, D.C. He has written articles on urban land values and structure and growth of residential neighborhoods and is coauthor of *Principles of Real Estate* (with A. M. Weimer).

The preservation of economic freedom within a competitive framework has become a central problem in a society increasingly characterized by huge concentrations of power. To conserve and expand the values we profess to believe in, the author offers proposals for dealing with big business, big labor, and big government, even if it means restricting some of our currently "sacred cows." 21

*Urban Growth in the Next 15 Years*

Population expansion and the rapid increase in urbanization during the coming 15 years will bring development of whole new industrial complexes, residential communities, and commercial and recreation areas. With this growth will come one of the nation's great opportunities for co-ordinated planning of land utilization. Now is the time to study, plan, and arrange financing for the structures and facilities that will dominate the sixties. 29

about the

AUTHOR

ARTICLE

GEORGE J. STOLNITZ

Mr. Stolnitz is Professor of Economics at Indiana University; he specialized in statistics, econometrics, and demography. He formerly taught at Princeton University, where he received a Ph.D., and has worked at the United Nations and the Bureau of the Census. He has written numerous articles and a book on life tables.

*Our Growing Population: Threat or Boon?*

Still on the horizon but likely to loom large in the near future is the question: Does rapid population growth augur for a bigger and better America, or is it a threat to our survival? The answer may well be decisive for our civilization. This article puts pros and cons in calm perspective and offers some hopeful conclusions. 37

F. J. McDIARMID

During a distinguished career that began with a clerk's job and progressed to the vice-presidency at Lincoln National Life Insurance Company, Mr. McDiarmid has written numerous papers, magazine articles, and a book on investments and insurance. He is a fellow of the Society of Actuaries.

*Can Life Insurance Adjust to Inflation?*

Inflation is the bane of the life insurance industry, and one of the most promising proposals for meeting the threat is to hedge against it with such equity investments as real property and common stocks. This article examines both possible benefits and problems inherent in such proposals and points out basic changes necessary in investment laws and the life insurance contract. 46

LEO FISHMAN

A Professor of Economics and Finance at West Virginia University, Mr. Fishman has served as economist for the Department of Commerce, War Production Board, and War Assets Administration. He was a Ford Foundation fellow in 1953-54 and contributes extensively to business literature, often in collaboration with his wife.

*The Argument for Selective Credit Ease*

General credit restraint is an important monetary tool for controlling inflation but can—and often does—restrict or inhibit socially desirable economic activity. This article proposes a policy of easier credit, which would not increase inflationary pressures, for projects that it is in the general interest to encourage even during tight money periods. 65

## WILLIAM H. PETERSON

Mr. Peterson, a weekly contributor to the *Wall Street Journal*, is Associate Professor of Economics at the Graduate School of Business Administration at New York University. He will publish a book, *The Great Farm Problem*, later this year.

## RAY M. POWELL

Mr. Powell, who will soon join the faculty of the University of Notre Dame as Assistant Professor of Accounting, has for the past year been conducting research on this subject. His interest in depreciation problems stems from a career in accounting and tax work (teaching and consultation).

## DONALD F. ISTVAN

Mr. Istvan teaches accounting and works as a tax consultant. His article is based on a recently completed study of economic effects of tax depreciation reform. A member of the Indiana Association of Certified Public Accountants, he has accepted an appointment as Assistant Professor of Business Administration at the University of Rochester.

## E. W. MARTIN, JR.

A graduate in electrical engineering and a Ph.D. in mathematics, Mr. Martin worked for the IBM Corporation before becoming an Associate Professor of Business Administration at Indiana University. He has previously written several articles on computers and their applications.

## CONSULTATION

D. Mead Johnson, President, Mead Johnson and Company; Herman C. Nolen, President, McKesson and Robbins; Harold F. Smiddy, Vice President-Management Consultation Services, General Electric Company; and Charles M. Hewitt, Associate Professor of Business Law, Indiana University.

## *A Free Trade Area for the U.S. and Canada*

In an era of common markets, economic communities, and removal of trade barriers, why not a North American free trade area? Two of the world's greatest nations, with a long and proud history as good neighbors, have much to gain from the economic solidarity possible with free trade.

73

## *Depreciation Reform: What Does Business Want?*

Top financial officers in over 50 of the country's largest firms supplied material and offered opinions for this study of the kind of depreciation reform that businessmen would like to see enacted. Current methods actually used to cope with the tax depreciation problem are outlined, and their strengths and weaknesses are discussed along with proposals for a better solution to the whole question of tax depreciation.

81

## *Depreciation Reform: Cure for Recessions?*

Based on the same study of 50 of the country's largest firms, this article examines the question of whether or not changes in tax depreciation methods can be used to mitigate the effects of short-run business downturns. The conclusions, based on depreciation methods and capital appropriation policies now in effect, challenge some major proposals offered during the past recession.

90

## *Teaching Executives via Simulation*

Since men began managing enterprises, education for management has been their most challenging opportunity and most critical problem. Now the new decision simulation techniques promise to add a new dimension to executive development. By providing a management decision laboratory, simulation may offer the future's best hope for giving judgment experience to the people marked for higher management responsibility.

100

## *Are Profits and Social Responsibilities Compatible?*

The consultation weighs two basic questions of critical importance to the strength and survival of our economic institutions: (1) Are critics justified in charging that business decisions are overly oriented toward profit? and (2) Should business leadership give more thought to external ramifications of their decisions, and, if so, how do you do it?

54

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# profiles of the future

## RIISING PRODUCTIVITY

## AND THE DECADES AHEAD

*by Robert C. Turner*

WE LIKE to think of the past quarter-century as one of great economic and technological progress. And so it has been. But a quarter-century hence, we are likely to look back on 1935-59 as a fumbling beginning, a period when we released vast new potentialities for progress and growth but had not yet discovered how to turn them to full advantage.

### ACHIEVEMENTS

THE controlled release of nuclear energy, for example, was a dramatic break-through. But we have not yet begun to exploit its nonmilitary potentials. Automation in industry, such as computer-controlled oil refineries, is revolutionizing many production methods, but the process has barely begun. Automation has started in agriculture in the modern, assembly-line "egg factory," which integrates the living chicken into a complex of automatic machinery. But its application in many other uses is still in the experimental stage and has not even been attempted in most farm operations. The launchings of such satellites as Vanguard II, with its elaborate electronic pack-

age for scanning cloud formations and radioing the information back to earth, are dramatic achievements that attract headlines. We have not yet, however, begun to make effective practical use of these satellites for such purposes as weather control.

Perhaps more important than these dramatic technological break-throughs is a recent, basic change in the character of technological research and development. This is the fact that, within the past decade or so, technological research and development has become a pervasive, unextraordinary, and integral part of the productive process. Not many generations ago, technological research was the province of the lone inventor, the genius, the unconventional maverick, or the subsidized university scientist. Today, every productive enterprise worth its salt considers technological research to be a part of its normal operations. There has grown up, in recent years, a \$10 billion industry that Sumner Slichter calls the "industry of discovery." We have discovered that discovery is profitable business. Research has been stimulated by war—and by peace. It has survived prosperity and recession;



more money was spent on technological research in 1958 than in any previous year. *Fortune* forecasts that more money will be spent on technological research in the 1960's than in all the previous years of United States history from 1776 to 1959.

#### SHIFT IN EMPHASIS

TECHNOLOGICAL research has changed in another profoundly important characteristic. Instead of focusing on end products—the railroad, the automobile, the washing machine, and the refrigerator—research has increasingly shifted back toward the start of the productive process. The really “hot” areas of research now pertain to the molecular, atomic, and subatomic nature of matter and the anatomy of energy. So long as technological research was concerned primarily with end products, the number of potential contributions was fairly limited. All the inventions *could* be invented. But once we start altering the basic composition of matter and of energy, the increase in the number of permutations and combinations becomes exponential by the time the end-product stage is reached. This change is reflected in a fundamental change in the *kind* of products that technological research is achieving. Machines that are a simple substitute for the human hand are a different kind of device than servomechanisms that can remember, apply complex instructions to changing circumstances, and recognize and correct their own mistakes. These come close to being a substitute for the human brain.

The economic significance of such technological developments is that they raise the efficiency—the productivity—of the human being. They make possible rising material standards of living by

improving the productivity of the one scarce resource of most interest to us: our own labor time.

#### BETTER TECHNIQUES

OF COURSE, technological research is not the only reason for rising productivity. A second important and closely related reason is improved understanding and better techniques for the administration of productive enterprise. The self-service supermarket—an organizational change—has raised the productivity of retail clerks. The egg factory is as much a matter of organization as of mechanization. Data on inventories-to-sales ratios show no tendency to increase, and in some instances a tendency to decline—in spite of the great increase in the variety and assortment of new products being offered to consumers. The reason for this is the application of quantitative techniques to inventory control. Automated production requires not only machinery and electronic controls but also reorganization of the entire productive process from assembly of raw materials to market distribution. A new generation of professional managers, schooled in mathematics, statistics, and the application of quantitative techniques to production and distribution systems, is complementing and sometimes superseding the man who relies on intuitive judgment and psychology.

#### PRODUCTIVITY RISES

FOR THESE and many other reasons, labor productivity (output per man-hour) has been rising, and rising at an increasing rate. From 1850 to 1889, output per man-hour rose by about 1 per cent a year. From 1889 to 1919, the rate of increase averaged 2 per cent a year. From then until the end of World War II, the rate

of increase averaged about 2½ per cent a year.<sup>1</sup> Since World War II, productivity has increased by over 3 per cent a year.

From mid-1956 to mid-1958, the rate of productivity increase definitely slowed down—to about 1½ per cent a year. There were those who concluded from this two-year experience that the postwar spurt was a temporary affair, that the 1960's would settle back to a 2 per cent rate of increase or less.

This, in my judgment, was a misinterpretation of what has happened in the past two years and of the causes of productivity increase. Productivity failed to rise by its usual percentage in 1956-58 chiefly for two reasons, one pertaining to the numerator and one to the denominator of the productivity fraction.

First, the pressure of consumer demand definitely subsided. Whether this was caused by government policy, conscious or otherwise, or by autonomous changes in consumer attitudes is a separate issue that we need not discuss here. The simple statistic is that consumer expenditures, in constant dollars, leveled off. This leveling off occurred at a time when substantial additions to productive capacity were being made in most major industries,

<sup>1</sup>See J. Frederick Dewhurst and Associates, *America's Needs and Resources: A New Survey* (New York: The Twentieth Century Fund, 1955); John W. Kendrick, “National Productivity and Its Long-term Projection,” in National Bureau of Economic Research, Inc., *Studies in Income and Wealth*, Vol. XVI: *Long-range Economic Projection* (Princeton, N. J.: Princeton University Press, 1954); and John W. Kendrick, “Trends in Product Prices, Factor Prices, and Productivity,” in Compendium of Papers Submitted by Panelists Appearing before the Joint Economic Committee, *The Relationship of Prices to Economic Stability and Growth* (Washington: U.S. Gov't Printing Office, 1958).

and when expenditures for research and development were being stepped up to new highs. The basic foundation for further rapid increases in productivity was definitely present, but the demand to call them forth did not materialize. It is a historical fact that productivity rises most rapidly when the economy is under pressure.<sup>2</sup> Labor productivity rises most not when labor is fearful of unemployment but when *management* is under pressure to get the most out of labor.

A second reason, paradoxically, is that the leveling off was gradual, and the subsequent decline was moderate. Production workers in manufacturing were laid off, the total declining from well over 13 million in early 1956 to 11½ million in mid-1958. But non-production workers were not laid off. Except for a slight decline in late 1957 and early 1958, the number of nonproduction workers continued to inch upward throughout this period. Employment in trade held about even, and employment in finance, service, and government rose steadily. The recession, incipient and realized, was never severe enough to cause business to reduce its forces of technicians, engineers, salesmen, accountants, managers, and research scientists. But these persons all are included in the man-hour input figure, the denominator of the fraction.

The proof of the pudding is the fact that, since the upturn in demand of mid-1958, productivity has already risen by enough to make up for most or perhaps all of the sluggishness of 1956-58. Given adequate demand pressure, I can see no reason why productivity should not continue

to rise by 3 per cent a year throughout the next 10 or 15 years. A GNP of \$700 billion in 1970, in today's dollars, is definitely in sight; and an \$800 billion GNP is a distinct possibility.

#### RESULTS OF RISE

THIS sustained and rapid rise in productivity, with its antecedent technological and managerial revolutions, is having effects of economic and social consequence.

First, rapid technological change and productivity growth have forced us to revise rather considerably some of the assumptions as to business and consumer motivations underlying Keynesian theory. It is now apparent that technological change can be a prime determinant of demand, especially short-run demand for consumer durable goods. The consumption function, in a technologically dynamic economy, is not dependably stable and, restricted to short-run demand for durables, can be notoriously unstable. The 1955 automobile market is a case in point. Investment expenditures are also heavily influenced by technological change and obsolescence. Capital expansion and replacement programs are often undertaken simply because technology forces them. Keynes, or more accurately Keynes' interpreters, foresaw a withering away of investment opportunities and ultimate stagnation. They did not take into account the force of technology and the explosion in productivity that war-induced demand could touch off.

Second—these points are, of course, not unrelated—the same factors that give us rising productivity also reinforce any inflationary bias that may already be present in the economy. This may

seem to be a paradoxical conclusion. Is not the objective of technological research to *decrease* costs? Does not an increase in labor productivity *decrease* real wage costs? And should not therefore these lower costs be reflected in lower prices?

The answer to this anomaly lies in the change in the *structure* of costs that occurs with technological change. Relatively fixed costs are substituted for variable costs. These fixed costs include, first, capital costs. But they also include the wages of overhead personnel—highly trained, skilled people who cannot be laid off and rehired as demand varies. From 1947-57, nonfarm employment of overhead-type personnel—professional and semiprofessional workers, proprietors, and managers, and sales and clerical personnel—increased by 31 per cent, while employment of direct labor—craftsmen, foremen, operatives, and laborers—increased by only 6½ per cent. Within manufacturing, during the same 1947-57 decade, the number of nonproduction workers increased by 55 per cent while the number of production workers increased by only 1 per cent. The reasons for this shift from production to nonproduction workers are research and development, the substitution of complex laborsaving machinery for labor, consequent expanded management and control functions, and expanded sales activities.

In and of itself, this shift should have neither an inflationary nor a deflationary impact. But when it is coupled with an industrial structure where pricing practices are strongly cost-oriented, where any reductions in price are vigorously resisted, and where an organized labor movement also strongly resists wage decreases, any existing inflationary potential

<sup>2</sup>The intervals of 1941-42 and 1945-46, incidentally, were exceptions because of the conversion and reconversion problems created by war.



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is magnified. A *decrease* in demand runs into rising fixed costs per unit. The cost accountant can show good reason why prices should not be cut. And given adequate market power, prices are not cut. An *increase* in demand, by reducing fixed per-unit costs, opens the way for decreases in prices. But strong unions and strong business firms not only see to it that such cuts do not occur; they are more likely to take advantage of the improvement in their bargaining position to raise prices. That is, the net effect of rising technology and the consequent shift in the cost structure tends to make the pricing process increasingly a one-way street.

The third broad economic effect of increasing technology is to increase the stability of employment and incomes in our economy—at least insofar as relatively minor swings in demand are concerned.

The figures previously cited on occupational shifts—the increase in the proportion of overhead workers—are relevant here. Data on wages and salaries are also interesting. In 1947, 75 per cent of total labor costs in manufacturing was wages; 25 per cent was salaries. In 1957, the corresponding percentages were 68 and 32. Between 1947 and 1957, total wages increased 60 per cent; total salaries increased 153 per cent.

Salaried workers are not, of course, invulnerable to declines in demand, but they are much less vulnerable than hourly wage workers. And the increase in stability that this shift engenders is greater than that which the bare percentages suggest. The more stable *spending* that results from a salary rather than an hourly wage in turn stabilizes the incomes of those still on an hourly wage. In effect, the likelihood of

induced fluctuations in consumer demand is reduced.

Incidentally, this shift from hourly wage workers to salaried workers is having another effect. The average weekly hours of wage workers are declining, and probably will continue to decline to 38, 35, and maybe 32 hours in the 1970's or 1980's. But the hours of professional workers, both salaried and self-employed, show no similar tendency to decline. My colleague, Professor Ross Robertson, suggests that we are reversing the practice of ancient Athens. We are creating a new slave class: the highly skilled professional worker.

#### OUR LABOR FORCE

A FOURTH major economic consequence of technological research and development and rapidly rising productivity is that it aggravates the problem of absorbing a growing labor force. In the past few years, the number of net new entrants into the labor force has been about 750,000 persons a year. Between 1965 and 1970, this number will average about 1,500,000 persons. In the meantime, the average age of the labor force, which in recent years has been rising, will shift sharply downward as the hordes of youngsters clamor for jobs. Our labor force will then have less experience and less in the way of developed skills.

Effective absorption of a growing labor force, regardless of productivity increase, requires two conditions. One is autonomous initial increases in demand. These may come from increases in business investment (in anticipation of endogenous increases in demand), from government, from foreigners (net exports), or temporarily from a shift in the saving rate. The other condition is adaptability in the labor force to

the work requirements of a changing industrial complex.

If change, either in technology or in the size of the labor force, occurs with sufficient gradualness, neither of these circumstances presents any insurmountable difficulties. We did a pretty good job in the 1950's. My point is that in the 1960's, neither type of change will be gradual. I estimate that during the decade of the 1960's we will need an expansion of effective demand of \$250 billion, in 1958 prices, or over 50 per cent to compensate for productivity increase and the increase in the labor force—even after allowing for a 5 per cent reduction in the average work week. This will take some doing. Furthermore, a much larger percentage of the labor force will need to have modern, in many cases advanced, technical skills.

#### CONCLUSIONS

IN THE absence of such doing, we are likely to see on both fronts in the 1960's a period of general prosperity, rising incomes, and rising prices accompanied by rising chronic unemployment—a highly specialized unemployment, the technologically unemployed.

Thus, the 1960's and the 1970's will be an era when the new technology, of which we have to date seen only the beginnings, will come to fruition; when material standards of living will rise to the point that, for the first time in the history of any nation, the vast majority of the people will live in comparative comfort. But it will also be an era in which we will be hunting for solutions to a new breed of economic problems calling for new analytical techniques. Economists, in the 1960's and 1970's, are not likely to be included among the technologically unemployed.



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# Which American industry now betters the living of 2 out of every 3 families?

## **...HERE ARE SOME SURPRISING FACTS ABOUT THE TRADING STAMP INDUSTRY**

SO FAR, whenever our nation's economy has needed expansion, a new industry has sprung up to help the country go ahead. The automobile industry, employing millions, was followed closely by the development of radio and radio broadcasting to make more millions of jobs. Then came the airplane industry, air conditioning, plastics, television, frozen foods, to change our lives some more.

The trading stamp industry, while not new, belongs to this expansion group and has been one of the fastest growing of all. Today it betters the living of more than 2 out of every 3 families—the 35 million American families who save trading stamps.

Obviously, an industry affecting such a large proportion of our population must bring far-reaching benefits for the nation's economy. And it does. In 1957 the trading stamp industry bought 250 million dollars' worth of products from America's manufacturers. In one way or another, it provided employment for

90,000 people in many different industries.

Its economic side benefits, too, are many. In 1957 the trading stamp industry was a 20 million dollar customer of transportation companies, bought 7 million dollars' worth of advertising and paid 55 million dollars in state and federal taxes.

The people in this industry, its merchandise and redemption stores, its warehouses and transportation and all the activity that goes on within it are integrated economically *everywhere* in state after state.

Thus it seems plain that the trading stamp industry along with the 35 million families it serves has become, like other expansion industries, a living, vital segment of our economy.

★ ★ ★

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## Comments from Our Readers

NOTE: The writer of the following communication to the Editor of BUSINESS HORIZONS has just observed his 88th birthday. Before his retirement, he was an engineer-turned-economist-and-executive with the Westinghouse Corporation. Twenty years ago, long before it became the hot topic it is today, he began to do some challenging thinking and writing about the price-wage-profit requirements for sustained economic growth without inflation.

I first became aware of John E. Webster and his ideas when Edwin Nourse included a paper by Webster as an appendix in his famous 1944 work, PRICE MAKING IN A DEMOCRACY; then corresponded with him when I served on the Council of Economic Advisers staff in the early fifties; and have renewed the correspondence recently. The striking thing about this remarkably active octogenarian (I am amazed at the volume of lucid commentary on economic affairs that he continues to fire off in all directions—to journals, business organizations, research groups, legislators, and even the Vice-President of the United States) is, besides his stamina, the fact that he believes he has the answer to the price problem that is perplexing so many of us.

In granting my request that they publish this communication, the Editors salute Mr. Webster's intellectual youth and vigor—but in no sense patronizingly. While one may question the feasibility of the particular solution he proposes, he gives us some incisive analysis and, by winding up with a concrete proposal, provides a nub for further discussion. Most of us still are teetering on the edge of the price problem because we have some new institution-building to do in this area, and we don't know where to begin. A man who thinks he does merits our attention.

JOHN P. LEWIS, Professor of Business Economics  
and Public Policy, Indiana University

## A SUMMONS TO STOCKHOLDERS

### TO THE EDITORS:

The free enterprise economic system is largely responsible for the present high standard of living in the United States. The system has been tremendously creative. Difficulties in distribution, however, have been great. The real problem is how to share equitably the values created, and it concerns the whole economy.

As an article in *Business Week* has pointed out, "classic economic theories held that prices that



were free to adjust themselves would keep an economy in balance." The idea was that the problem of distribution would be solved automatically in a satisfactory manner. But experience has shown that prices have not freely adjusted themselves and that the economy has not been in balance; "prices are controlled by corporate managers, union leaders, and government officials, rather than by a divinely guided balance among myriad tiny forces."<sup>1</sup> It is said that 90 per cent of the products sold in the United States are priced by their manufacturers;<sup>2</sup> thus, while there may be bargaining over the wages, employers have almost complete control over the prices that the workers pay for the goods and services they buy. The success of a free enterprise system depends heavily on the operation of a self-stabilizing price mechanism. For only properly adjusted prices can readily hold an economy in the continuous balance whereby goods and services are distributed wisely, and social harmony, stability, and progress are facilitated.

Despite the conviction of *Business Week* that prices, if properly set, can solve the depression problem, its writers, in the article I have cited, accept continued imbalances and the failure of prices to stabilize themselves.

"This uneven upward course of prices and wages in different industries can hobble economic growth. If prices in one set of industries get so high that they suck purchasing power away from another set of industries, pockets of underemployed low-income resources and labor will result. These laggard areas will act as a drag on the whole economy and will limit demand for the front-runners' own products.

Economists . . . [today] . . . portray America's new pricing system as something far different from the equilibrium that Adam Smith imagined two centuries ago. They suggest that, far from being self-stabilizing, this new price system may work on the ratchet principle. It may run in only one direction—upward—or else stop."<sup>3</sup>

### *Consumption-Investment Imbalance*

The function of an economy is to build things to use and to consume. Production of these things can be expanded safely and indefinitely. But factories, banks, inventories, savings, and debts are tools; their creation can be expanded at a danger-

ous rate, and often is. With the productive capacities of most industries rarely used more than 80 per cent, it is dangerous to expand investments at a rate higher than consumption is expanded. Balance will be attained when investments are never expanded at a rate that would be unprofitable to continue. Although from 1929 to 1956 inclusive, the annual average investment has been 12.5 per cent of gross national product, investments have fluctuated greatly from year to year; 15.6 per cent in 1929, 3.0 per cent in 1933, and 15.7 per cent in 1956. The ratios of personal consumption to GNP have also varied; 67.6 per cent was the over-all annual average for the period from 1929 to 1956, 83.2 per cent in 1933, and 63.7 per cent in 1955-56.<sup>4</sup>

It is usually claimed that wages share equally with the present pricing system in creating inflation and imbalance. But in terms of the kind of imbalance that mainly threatens us, it certainly cannot be argued that workers get too large a share of total real income. For low consumer buying power is our real trouble. This is what causes depressions. At the same time, this is true: The means by which workers receive their shares of gains in the economy's real income—whether entirely through increases in the money wages they receive or also partly via reductions in the money prices they pay—do have a vital impact on the course of the price level. If consumer buying power is to be strengthened by a redirection of real income that does not aggravate price inflation, much of the reliance will have to be on lower prices rather than on higher wages—unless worker productivity rises more rapidly than it has in recent years.

It is apparent that if we are to have a self-sustaining balance, it must be at full employment. Balance means an optimum cost-price relationship, one where individual prices and wages vary but are resistant to volatile change, where average prices are comparatively stable, and where real wages keep pace with the expansion of productive capacity. Such a full-employment balance will distribute GNP in the manner necessary for our economic stability and growth.

### *Cures That Won't Work*

To get an increase in the share of total income going to consumers, some of the product prices now set at the discretion of the managers of our great industrial corporations will need to be lowered. This would benefit all groups, but the only group having both the power and the incentive to

<sup>1</sup> "A Pricing System That Works Only One Way—Up," *Business Week* (June 15, 1957), pp. 188-98.

<sup>2</sup> Roger M. Blough, "Prices and Inflation: Congress Gets a Lesson," *U.S. News and World Report*, XLIII (August 23, 1957), 97.

<sup>3</sup> "A Pricing System That Works Only One Way—Up," pp. 189-98.

<sup>4</sup> *Economic Report of the President* (Washington: U.S. Gov't Printing Office, January, 1957), Table E4.

do the job is, I believe, the owners of the stocks of corporations. To date, to be sure, there is no indication of any stockholders' team-action in this direction. In 1942, I advocated such an action in an article entitled "Free Enterprise Must Save Itself," published in *Advanced Management*.<sup>5</sup> Dr. Edwin G. Nourse used excerpts from my plan as Appendix E in his *Price Making in a Democracy*.<sup>6</sup> I still believe the plan is sound. The following brief examination of our present economic system will support this view.

There can be no incentive for business executives to lower prices in order to increase consumer buying power, unless all industries in the economy cooperate. Business units are justified in trying to get the best odds and, acting singly, no one of them can expect to supply a significant stimulus to general consumer buying power by adjustments in its own price policies. There is need for individualism in production and growth, but not in building a market for the products of continued full employment. Such market-building will require a solid front of all industry, a front, I believe, that can be provided only by the cooperative action of corporate owners.

We cannot expect to leave the task to hired managers. In spite of the fact that high, constantly growing consumer buying power is the first essential of a mature free-enterprise economy, managers typically resist any self-disciplined group action to support this requirement, since the first steps needed to increase consumer buying power either would raise the expense items on the corporations' profit-and-loss statements or would lower their unit revenues. Corporation executives, who now are said to determine the prices at which 90 per cent of the products in the United States are sold, are hired by owners to "make money" for the stockholders, and they take the assignment literally and seriously. That the management teams of large corporations are doing this job well is proved by the fact that, in the years 1947 through 1958, manufacturing corporations with assets over \$100 million had profits after taxes on stockholders' equity of 13.2 per cent. This was 65 per cent higher than the profit rates obtained by those with assets below \$250,000.<sup>7</sup> Given the habits of mind to which this record attests, it is too much to expect the officers of major corporations, in managing other people's money, to take the lead in reducing top prices.

<sup>5</sup> *Advanced Management*, VII (July-September, 1942), 117-22, 140.

<sup>6</sup> Edwin G. Nourse, *Price Making in a Democracy* (Washington: The Brookings Institution, 1944).

<sup>7</sup> *Economic Reports of the President*, 1953-1958.

Nor can easy money solve the problem. Money cannot create nor maintain economic balance during periods of high employment; in addition, it can do, and now does, many things that prevent stability. Many of these things are the work of self-styled liberals. I consider myself a liberal, but I am not a statist. In many cases, liberalism is a blending of a humanitarian desire to help the unfortunate and a human desire to obtain a place in the government. Attempted corrections often take the form of creating a new privilege to counter existing privilege.

The value and quantity of money are juggled. Cheap money is loaned to expand industry during unbalanced boom periods. Any increase in current purchasing power, of course, increases employment and production; but the increased consumer buying power that would result from lowering top prices would give wholesome economic growth, while an increase of private investment above its long-term average percentage of the GNP (about 12 per cent), might give only a temporarily stimulated growth.

Tools with a consumer market are extremely useful. But I spent enough years in a company with idle men and idle tools to know that tools without a market are useless. There is no doubt that the high bank loans to industry in 1955-56 were a major cause of the imbalance that caused the 1957-58 recession. Easy money is merely a stimulant, not a cure. We need lower top prices, not easier investment money, to increase real consumer buying power.

And neither are direct government controls the answer. A universal suffrage democracy gives individuals the right to assume ownership, but it does not provide the electorate with the ability to use facilities wisely. Wise use requires *prices* that will give a balanced income distribution on the first sale of consumers' goods and services with all willing workers at work. Only suppressed or frustrated men will delegate this control of use to the government and submit to the inefficiencies of government bureaucracies. The latter never can fully resist the temptation to give privileges to the pressure groups that crowd in upon them.

Socialists are communists who have not yet learned that efficient production and just distribution cannot be obtained through government controls. The Russians already are learning the lesson. They have found it necessary in their industries to give bonuses to management and workers!<sup>8</sup> It

<sup>8</sup> William Henry Chamberlin, "The Failure of Socialism," *Reader's Digest*, LXXII (February, 1958), 187-91.



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would be ironic if we decided to forsake a decentralized pricing system at the same time that they are finding themselves forced back to it. We shall do well to remember that efficient growth and high productivity can occur only when group or individual rewards are proportional to values created.

At the same time, the over-all efficiency of the economy is undermined when workers stand in perennial fear of unemployment. Job insecurity makes it profitable for industrial workers to drag their feet. The free enterprise economy cannot really be successful until it can earn political support, which cannot be earned until industrial workers are secure in job opportunities and have high incentives to work efficiently. And there is but one way to get employment security. Again, prices must be low enough to build and maintain sufficient consumer buying power to provide a market for the products of all workers. The free enterprise system must give workers the opportunity to produce the goods and services that they themselves want.

Everything considered, there is very little hope that we can get the price adjustments we need through government. Governments have neither the incisiveness nor the political resources to strike to the heart of the problem. As a result, they fall back on such temporizing measures as deficit spending, high taxes, and diluted or easy money. Because prices of manufactured goods cannot be lowered by the government as they should be, the government has increased prices of farm products as they should not be.

#### *Stockholders Can Do the Job*

We cannot rely on business executives, nor easy money policies, nor governmental price controls to lower top prices and solve our economic problem. I believe that this great task can be carried out only by self-disciplined group action by the owners—the stockholders—of our larger manufacturing and marketing corporations.

I am completely aware of the present lack of efforts of stockholders to assume responsibility for prices set by their corporation executives. With no co-ordination, they keep their holdings in corporations that are big, efficient, and monopolistic. Some of them know, subconsciously, that their corporations, by their ability to establish and administer prices, do keep prices at a level that prevents a self-sustaining balance between costs and prices during boom periods. But stockholders accept the idea that booms and busts are normal to a free enterprise system, and encourage their cor-

poration executives to "make hay while the sun shines."

As individual stockholders, this is the best they can do. It has not yet occurred to them that they, as a group, have the responsibility, the motive, and the power to keep the sun shining. They own American industry and could instruct the directors of their corporations to set up a "Judge Landis" authority over top prices, charged with promoting continuing balance in the economy and with seeing to it that private price policies help to distribute goods and services wisely, and in a manner calculated to further social harmony, stability, and progress. In short, the stockholders of American industry could do as a group all that Adam Smith mistakenly thought they could do as individuals.

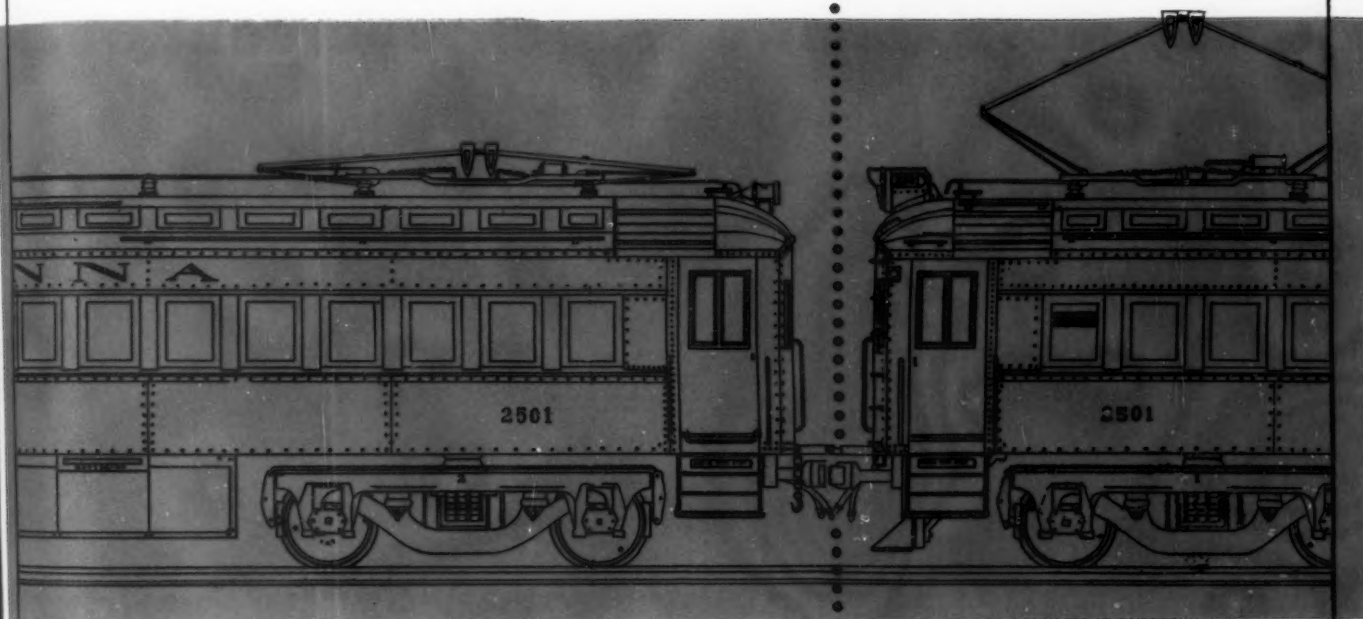
Fortunately, there is now a large and rapidly growing number of across-the-board portfolios of common stocks.<sup>9</sup> At the present time, the trustees of these portfolios, through selective purchases, try to get temporary maximum income. They accept depression risks that they could eliminate by the use of their proxies. They have the alternative of setting up a top-price umpire with authority to so limit top prices that consumer buying power will be high enough to cause booms to be self-sustaining. With depression risks eliminated, the risk of bad management could be overcome by selective stock purchases. Well-managed, efficiently operated plants would still be high-profit, high-dividend plants. Successful executives would still be successful high-salaried executives. They could be protected from depression failures, and without depressions, they would find their unit costs much more stable. In fact, very few of them would lose any real decision-making discretion. As it is now, nearly all executives operate under prices set by others. One man or, at most, one firm sets prices for most of the steel sold, and the same situation holds in many other industries. Of course, governments virtually set prices for all utilities.

Fitting production to changing demand, in a free-enterprise system, would continue to be the complete responsibility of producers. With top prices limited to provide a market for the product

<sup>9</sup> Peter F. Drucker, "The New Tycoons: America's Next Twenty Years, Part III," *Harper's*, CCX (May, 1955), 39. "In the great majority [of companies listed in the New York Stock Exchange] . . . the only large stockholders are institutional trustees for other people's money: investment trusts, pension funds, and banks. Together these 'fiduciary investors' have effective working control of these companies—that is, of the commanding position in our economy. Their holdings amount to one third of all the marketable common shares of American business."



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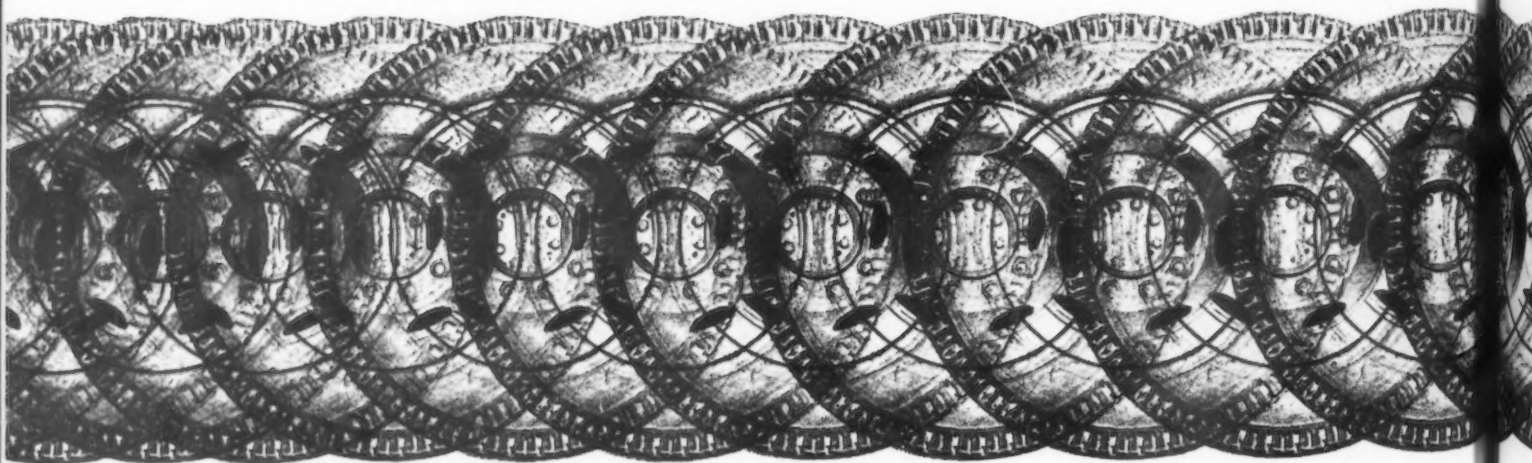
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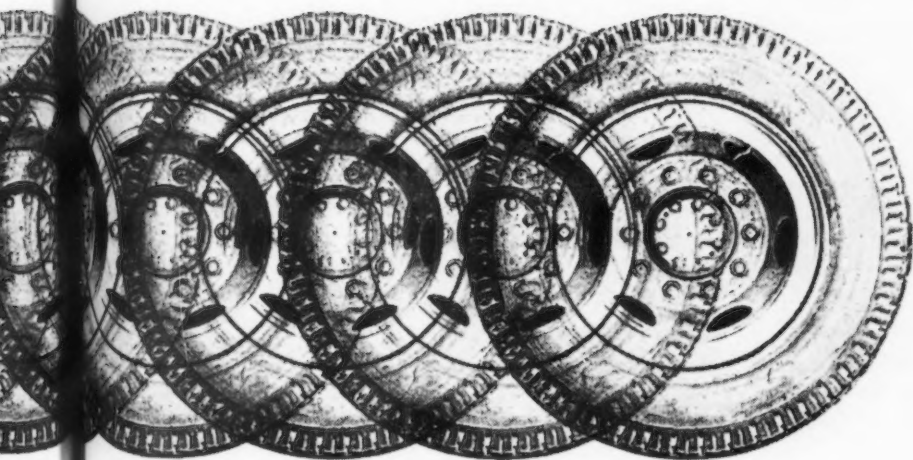
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\*This figure is based on the new diesel truck registration figures of the R. L. Polk Co., through November 1958.

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of all willing workers, there would be no repetition of the condition from 1928 to the late 1930's. From 1929 to 1932, prices of motor vehicles, agricultural implements, cement, and iron and steel decreased by only 14.5 per cent while production went down 72 per cent. But in agricultural commodities, prices went down 54 per cent, while production went down only 1 per cent.

Prices do determine balance, but prices now are not set with balance as the objective. As the *Business Week* article referred to previously points out, "according to theoretical analysis, prices are set either to gain the most profit possible or, in the case of price-cutting, to eliminate the competition."<sup>10</sup>

One strong reason why owners should unite to reduce top prices and increase consumer buying power and thus job opportunities, is the presently almost universal slowdown practiced by hourly workers to make jobs last. This is as much a personal matter as a union matter. Good workers are as skilled in working inefficiently as efficiently. Labor's antiproduktivity is shown by, for example, the fight for the 32-hour week, featherbed jobs, seniority privileges, union shops, and the elimination of speed-ups. Now, labor makes jobs last by reducing production, but business could make jobs last by lowering prices and increasing production. With security in their jobs, workers would soon find that it would pay to do their share in increasing productivity.

Workers now justified in dragging their feet have great potential capacity and incentive to increase productivity. With "assurance of standby employment," a 20 per cent increase in production with present employment and facilities would be, I suspect, a minimum estimate. With lowered top prices, the owners' share of this increase would aid in keeping total profit as high as can be absorbed by a full-employment self-sustaining economy—and a self-sustaining economy must be a full-employment economy. There can be no stability with willing workers unemployed.

So long as enterprise is free, creative jobs are made by men of enterprise; they create the jobs and the buying power to absorb the products. To the extent that they fail, the government has, by the Employment Act of 1946, assumed the responsibility of filling the *employment slack*, not the *production slack*. Government-made jobs are rarely very creative. In fact the government, in order to make jobs last, has made it illegal to pay individuals or workers as a group for production

above average—and the average can be very low. Possibly the lowest average occurred when production in the British nationalized coal mines fell so low that the government closed the pits.

Fortunately, the free-enterprise system has invented various incentives to increase productivity—scientific time studies of jobs, premium payments, and so on. Full worker cooperation, however, is far more important as an incentive to increase productivity. Lincoln Electric is the shining example. Some years ago, as I recall it, James Lincoln was selling a competitive product for \$30,000 per year per productive worker, while the average of all manufacturers was about \$7,500. Every employee was on the management team and was paid accordingly. Men want to work efficiently if they have an opportunity to work regularly.

In this era of world tension it is plain to see, of course, that the significance of vigorous, uninterrupted economic expansion reaches far beyond its direct domestic consequences. In our contest for industrial supremacy with the USSR, broadening and unrestricted economic opportunities for our youth are of utmost importance; and we cannot depend on the colleges alone. Uninhibited channels of opportunity should also run from apprentice courses, high schools, and trade schools well up into our industrial structure without, at the same time, interfering in any way with established workers. In other words, it is essential that we establish *full* job opportunities for everyone, young and experienced alike.

### In Conclusion

The foregoing explains why I am so convinced that owners—stockholders—as a group should establish a National Market Building Association with a "Judge Landis" as an umpire over top prices. This, I think, is the only way to have full employment and balanced economic growth with sustaining investment and high productivity, which would give the productive workers the feeling of belonging and the incentives to work efficiently.

As a self-disciplined group, the stockholders of American industry could, as I have said, do all that Adam Smith mistakenly thought that competition would compel them to do as individuals. We must remember that the utopia envisioned by Adam Smith was based on *profit* earned by *competitive selling*. There was no deficit spending, no diluted easy money, no privileged pricing, no administered prices. The manufacturers were not to determine the prices at which 90 per cent of all sales were made.

<sup>10</sup> "A Pricing System That Works Only One Way—Up," p. 190.

A free people must be the master, not the servant of its government. Government control of production is so inefficient that it will be accepted only under state domination. On the other hand, prices under our present approximation of Adam Smith's individualism "work only one way—up" toward inflation and booms-and-busts. The kind of pricing system we now have has seldom provided enough consumer purchasing power to buy the product of full employment. This has given workers an incentive to restrict production and productivity. Every unit of business and labor is a "sucker" if it does not try to get the best odds. Great restriction is placed on the opportunities of noncollege young men to get established in industry. As our present disorganized system is operating, efforts being made to get full worker cooperation are countered by the scarcity of jobs.

Therefore, I vote for the scheme of owners' self-discipline in market building. Every free American joins and conforms to the rules of several groups. No one is self-reliant. It is completely in harmony with established custom, then, for stockholders, as individuals or as trustees of large portfolios, to establish an authority to limit top prices

sufficiently to establish an average price-cost ratio during periods of full production that will equate gross saving to the long-run needs for producers' plant, equipment, and research and for housing—an average price-cost ratio, in other words, that will make these periods of full production self-sustaining. I have seen no evidence that this result can be attained by the government. If it is not attained, however, the trend to complete control by the state is inevitable.

The free-enterprise system can survive only if it earns the support of the people—and this it has not done since 1928. If the owners of American industry will not act as a team in controlling top prices, then prices sooner or later will be set by the government. William Chamberlin's report on "The Failure of Socialism" is tremendously valuable; not merely because it tells of the failure of socialism, but also because it emphasizes that the USSR is grasping the advantages of piece work and time studies.<sup>11</sup> They are getting full cooperation of some workers—at low wages. We are getting full cooperation of few if any workers—at high wages.

JOHN E. WEBSTER

1428 Ferris Drive  
Orlando, Florida

<sup>11</sup> See "Failure of Socialism," p. 190.

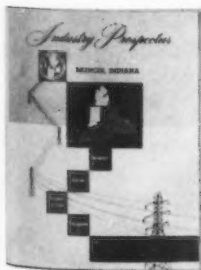
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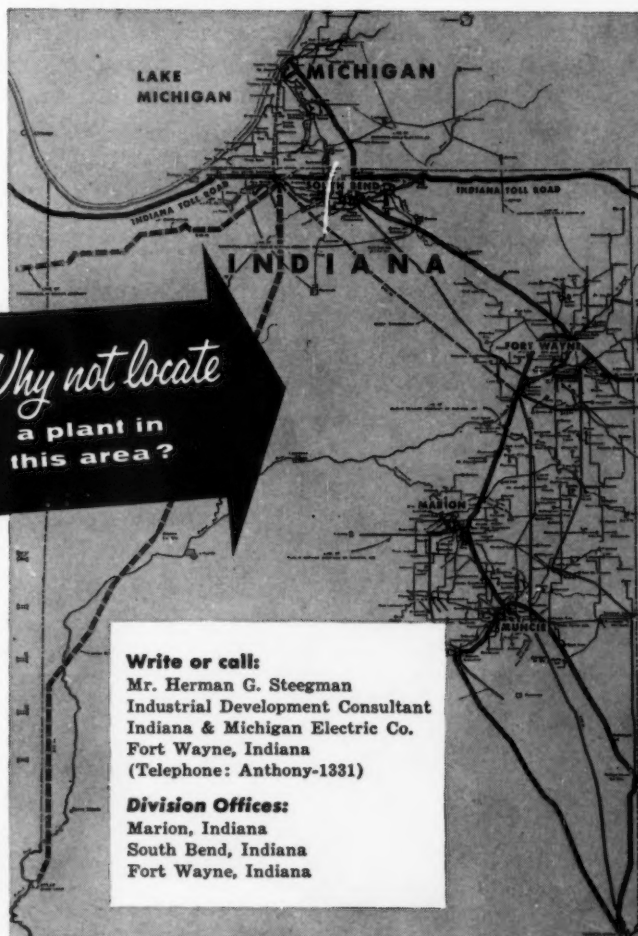
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Among many other Western Electric defense projects were the 3000-mile Distant Early Warning (DEW) Line in the Arctic and the "White Alice" communication system linking population centers and military installations in Alaska. Both were completed on schedule and turned over to the Air Force.

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## *Toward Economic Freedom — a Plan for Coping with Bigness*

GEORGE ROMNEY

WHEN a businessman ventures into areas of public controversy, he must expect the members of his audience to place different interpretations on his comments, depending on their backgrounds, interests, and experience. In a cynical and sophisticated world that is somewhat unaccustomed to this kind of business risk-taking, a deep concern for the national interest may be taken for self-interest or even lead to reprisal.

I am aware of this risk in discussing the application today of the basic principle that excessive concentration of power in any form violates the American concept of individual responsibility and freedom, but I believe the

problem is too vital to remain unchallenged for reasons of business or personal comfort.

Business and professional groups readily accept the view that something must be done to arrest the continual growth of government activities. These groups also accept the fact that limitations must be placed on labor unions, which have amassed great power. Because excessively powerful government and excessively powerful unions have become negative symbols to such groups, a businessman who proposes dispersal of power in these fields in accordance with accepted American principles causes little surprise. However, when the application of a similar principle is proposed for excessive power concentration in industry, some members of his audience lose sight of the principle. They begin to analyze

*This article is adapted from an address given by Mr. Romney at the 13th Annual School of Business Alumni Conference, Indiana University, on March 20. Mr. Romney is Chairman and President of the American Motors Corporation.*

<sup>1</sup> W. Somerset Maugham, *Strictly Personal* (New York: Doubleday, Doran and Company, Inc., 1941), p. 216.

the businessman's remarks for evidence of competitive zeal, personal spite, or some other selfish motive.

Whatever the risks I may run, I would like to state why I favor dispersal of excessive power in big government, in big labor unions, and in big industry.

I strongly recommend remedial measures in all three fields, because concentration of power in each area is generating pressures upon the individual that are, in effect, causing some citizens to forfeit their precious gift of political freedom for economic reasons and thus retarding our economic growth and strength. Continuation of these pressures and the resultant weakening of the bonds of personal liberty could be disastrous for America's destiny in this Space Age.

All Americans are beneficiaries of those who have, since the beginning of time, fought for human liberty and justice. For centuries men struggled, sacrificed, and died to establish religious freedom and separation of church and state. This gigantic struggle was the necessary forerunner of political, economic, and social freedom.

Our forefathers fashioned a constitution designed to make government subject to the consent of the governed—yet with adequate power to protect the citizens. The key to this historic result was, of course, the division of governmental power at the federal level, achieved through the dispersion of governmental functions and a system of checks and balances. State and local governments were made the principal means of direct personal governmental service and protection, and were safeguarded in these rights and functions by constitutional limitations. The individual was therefore protected and the will of the citizens was made supreme at the national, state, and local levels.

Now, few realize that the economic concepts and institutions developed within our political framework have been as distinct as that framework itself. Enactment of laws premised on the divine origin of man and his right to rule by consent, economically as well as politically,

has produced an economy largely and ultimately controlled by decisions of free consumers.

Through competition, individuals and organizations reward and penalize those vying for their purchases. It can be said that our economy, like our government, is "of the people, by the people, and for the people." It is an economy of "consumerism," not an economy of "capitalism."

Another principle of our economic society is that man generally shall be entitled to rewards commensurate to his contribution to society. We have also proved the economic value of dividing the results of economic progress among customers, workers, and owners.

America's superiority results from the stimulation of and unleashing of the innate capacities of its citizens. However, the future depends more on present tendencies than on present or past accomplishments. What present Americans think and believe will largely determine their future actions. The experience of life and history is that strength and weakness come from within, that nations and civilizations are destroyed by loss of conviction and purpose—in other words, by internal decay.

In the past 30 years, Americans generally have been preoccupied with material abundance, enjoyment, and security. As a result, we have lost to a serious degree the understanding and appreciation of our basic values and the strength of our convictions. Despite these setbacks and diversions, America's destiny has not altered. We possess the religious, political, economic, and social principles that, if pursued, applied, and perfected, will remove Americans from all forms of human bondage other than self-imposed ones and will encourage their maximum individual and combined growth and expression.

#### THE ANTITRUST LAWS

From our earliest history, powerful economic interests have undertaken to dominate the country politically and economically. The

tendency toward concerted or collective control in economic affairs was resisted, however, by our strong presidents and by passage of the antitrust laws.

The first big antitrust crusade of Presidents Theodore Roosevelt, Taft, and Wilson was followed by the passage of the Clayton Act, prohibiting specific monopoly practices. This act, however, exempted labor organizations from the antitrust laws; this was the genesis of immunity for labor in the exercise of monopolistic powers and abuses. And it is this exclusion that today provides the major point of conflict in the nation's economic policy. That policy regulates industry on the basis of fostering competition and promotes collective bargaining on the basis of approving monopoly.

Not until the government began promoting the expansion of union power as an offset to business power did labor exemption from the competitive principle become an economic weapon of blockbuster proportions. After passage of the Wagner Act in 1935, union power was substituted for business and agricultural power as the most important single political influence in our country, and in the last congressional elections it was the most important single influence.

As a result, we have a Democratic party increasingly dominated by union leaders and a Republican party importantly dominated by business leaders. Many union members are defaulting on their political citizenship and relinquishing it to unions for the economic benefits of union membership. Too many corporate executives and white-collar employees have become political eunuchs who have substituted corporate citizenship and the hope of economic advancement for their priceless heritage of independent political action.

Economic motives have become *prime* motives for political activity. The Republican and Democratic parties are devoid of substantial differences based on human, political, social, or broad general economic principles. Both parties have reached the point where their primary effort is to gain immediate victory by meeting the economic demands of as many

groups as possible with the least offense to other groups and the general public; soundness of demands is subordinated to the reward of these demands at the polls. Both parties in recent years have voted public funds that secured the support of special interest groups.

I believe we must prohibit economic organizations from direct or indirect political activity and expenditures. What right has either a union or a business to create an atmosphere where a member's or employee's economic status can possibly be thought to depend on his political views and convictions?

There is the additional danger that our economic effort in this country may be seriously impaired by diffusing and confusing the basic purpose of both union and industrial enterprise. Unions and industrial enterprises are created for economic purposes. Substitution of political for economic purposes can fundamentally alter the whole character of our economy and country. It is certain to heighten the present conflict in each enterprise because this conflict would then involve not only present economic differences but new political differences. National conflict in economic and political policy threatens to make *political* institutions out of our *economic* organizations.

The growing similarity between our two national political parties has been accelerated by their solicitation of union support. So long as the Democratic party is dominated chiefly by the unions and the Republican party is determined to avoid important offense to them, there is little likelihood of developing fundamental distinctions in their basic positions.

To encourage an increase in political participation by more citizens, we must have two *distinct* political parties. The people need real choices in order to express themselves. At the present time, we need at least one political party in America devoted to the interest and welfare of all Americans. We need at least one political party that is more dedicated to the proven principles of human liberty, justice, and progress than to immediate political victory through excess economic political power, subsidy, and advantage.



Speaking broadly of all government at all levels, governmental functions have necessarily increased—and indeed I believe they will continue to increase as they meet the deficiencies in our present national economic policy and in our educational, recreational, and public service programs. This prospective enlargement increases the urgency of reapplying the constitutional restraints to the federal government. It increases the urgency of reducing its present excessive responsibilities and services and restricting its powers of taxation and subsidization. We must transfer many of these back to the states and local communities where they belong. If we fail to do so, our states will soon lose their effective separate status.

It is necessary to recognize and effect a national policy of prohibiting the federal government from engaging in new governmental services that are extended directly to the individual citizen.

Success of such a realignment of political function would require states and local governments to assume their responsibilities where services and facilities are required.

#### UNION POWER

Now, let us turn specifically to the problem of excessive union power.

For a number of years, certain employers and others have advocated counterorganization of employer power to offset the centralization of union power. In the automobile industry, this was particularly advocated by Ford executives. Apparently they have changed their minds. The dangers and inadequacies of this alternative were pointed out recently by Theodore O. Yntema, Ford Vice President-Finance, when he said:

"Although industry-wide bargaining tends to equalize the economic power of business and labor, the results are unpredictable and often injurious to the economy. On the other hand, business may yield too easily to the union demands, knowing that if wage costs rise all firms will be affected equally. Or the opposite may happen: unable to settle the issues peacefully,

the parties may resort to economic warfare with an industry-wide shutdown and heavy losses to employees, stockholders, others dependent on the industry and the public at large."<sup>2</sup>

To stop the wage-price spiral, the President appeals for restraint and reluctantly threatens wage and price control. Others propose various forms of federal participation to protect the public interest in negotiations such as those about to start in the steel industry. Considering the power concentrations involved and the inherent nature of unions, reliance on self-restraint is naïve. The other approaches would all tend to substitute a government-directed and -controlled economy for the dynamic productivity of a partially free economy. Governmental control of wages and prices would not only control union and employer action, but would also control basic market choices by consumers. This would eventually substitute "statism" for "consumerism."

Furthermore, the proposal of wage and price control as a solution to the wage-price spiral (which has resulted primarily from the monopolistic nature of our labor laws) is either the result of abysmal economic ignorance or the political consequences of refusal to face up to the real problem.

The one sound and adequate solution is the elimination of the conflict in our national economic policy through adequate division of union power. This country cannot progress economically half competitive and half monopolistic. Such economic conflict is as destructive of economic progress as a nation divided over slavery and freedom was to social progress.

Are there alternatives to a change in national labor policy? Some people say all we need or should first attain is impartial enforcement of present local, state, and federal laws and sound judicial interpretation of present laws.

<sup>2</sup>"Challenges to the American Economy—Our Long-Run Internal Problems," a speech by Theodore O. Yntema, Vice President-Finance, Ford Motor Company; presented at the semiannual meeting of trustees, Committee for Economic Development, Washington, D.C., November 20, 1958.

Certainly there are flagrant instances of failure to impartially enforce local ordinances and laws against unions and their representatives. However, I do not see how impartial enforcement or sound judicial interpretation of present laws can solve the basic problem.

Others apparently believe that right-to-work laws represent a solution. While right-to-work laws might have some bearing where organization has not occurred, they have no particular bearing where excessive union power already exists.

While they are desirable, laws now proposed by leading Democrats and the Administration as a result of the exposure of corruption, racketeering, and a host of unethical union practices would be relatively meaningless in reducing the legalized excessive concentration of union power.

Am I placing primary reliance on the application of the antitrust laws to unions? Definitely not. Here are some specific ground rules and proposals—while they may not provide final answers, I think they at least recognize the basic problem.

- 1 The full benefits of genuine collective bargaining must be retained.
- 2 We must avoid creating some new form of bargaining inequality.
- 3 Legislation must be tailored to fit the divergent forms of trade unionism. Craft unions will, perhaps, require different treatment than industrial unions.
- 4 Employees working for business units having a relatively small number of employees or for concerns operating only on a local or regional basis must not be squeezed into a mold designed for unions representing employees of big business.
- 5 The combining of national unions for the establishment of common bargaining demands or use of economic power should be prohibited.
- 6 In our basic industries, affiliated unions of a national union representing employees of a single large company, regardless of size, should be permitted to combine in their collective bargaining demands and joint use of bargaining power.

- 7 Responsibility for collective bargaining with an enterprise in a basic industry having more than 10,000 employees should be in the hands of a union representing solely those employees. Affiliated unions should be free to combine in bargaining with employers having less than 10,000 employees, but only within prescribed geographical limits. However, those representing more than about 10,000 employees of a single employer should be prohibited from combining to establish collective bargaining demands or to exercise joint economic power against more than one enterprise.

Whatever remedy Congress may ultimately fashion to solve the problem of excessive concentration of union power, I believe it must conform to these limitations. The ultimate objective is to prevent combinations of employers or combinations of unions from destroying the competitive system. The only forms of economic discipline are competition or some form of absolute authority. To prevent the replacement of competition by absolute authority, it is necessary to prohibit joint bargaining on the part of large employers in our basic industries as well as joint bargaining on the part of unions representing the employees of large concerns.

#### INDUSTRIAL POWER

Now let us turn to the concentration of industrial power. One of the factors that prevents needed action is the public misconceptions about the advantages of colossal size in industry. Actually, there is some basis for union and public opinion that colossal industrial power justifies colossal union power. I believe our antitrust laws, which were enacted in the early stages of our industrial development, need to be modernized and strengthened to cope with new problems created by excess industrial power.

This need is illustrated by federal subsidization to create and maintain adequate competition. During and after World War II, the government finally broke the monopolistic position of the Aluminum Company of America by using indirect government subsidization to

establish four additional aluminum companies. In the case of the automobile industry, the President of the United States, about three years ago, directed the use of Defense Department procurement powers to indirectly subsidize the continuation of one of the five remaining passenger car companies.

Now, the competitive principle enables consumers to reward companies that successfully meet their preferences and to reject companies that fail to do so. Elimination, or economic death, is and *should be* the penalty of economic failure in a competitive society. It keeps our economy healthy and responsive to consumers' desires and needs. However, in most of our basic industries, the competitive discipline of the market place has now reduced the number of companies to a mere handful. In the case of the automobile industry, in my opinion, the five passenger-car companies left barely constitute the minimum number necessary for adequate consumer choice and discipline.

How can we continue to have the benefit of at least five competing passenger-car companies? I think there are only these alternatives:

- 1 The ability of each of the remaining companies to permanently escape economic failure. In light of earlier competitive history, this would appear impossible.
- 2 The restraint of competitive effort to permit the survival of weaker competitors. To the extent that this practice exists, it deprives our nation and individual consumers of the benefits of genuine competitive effort, and may lose for us the struggle for international leadership. We cannot afford competitive slowdowns.
- 3 Government action to subsidize weak competitors. As far as I am concerned, this approach is unthinkable as a matter of national policy. It leads to statism.
- 4 Some form of government regulation. This approach would either involve arbitrary government action to preserve marginal or substandard producers or would lead to industrial concentration and monopoly. It, too, is statism.

- 5 Provision for economic birth as well as economic death. I believe preservation of the competitive principle in America depends on provision for economic birth as well as economic death in our major basic industries.

Before the Kefauver committee last year, I made these specific recommendations for economic birth based on the degree of market domination in such industries: When an individual company engaged in only one basic industry is doing more than 35 per cent of the business, or, when a company engaged in more than one basic industry is doing more than 25 per cent of the business, this company should be required to submit to a specified public agency its own program for reducing its percentage of the particular business involved. An obvious way to do this would be through the creation of more than one company from the old company—in other words, by the process of division, or economic birth. Adherence to such percentage figures guarantees only the future existence of four or five companies in each basic industry. It does not require the breaking up of General Motors, or any other company, into more than two companies.

This proposal would reward, not penalize, a company like General Motors for being successful. It would give us the advantage of two companies with the potential competence of General Motors, instead of one. It is the only way such an enterprise can grow without restraint or limit in a free competitive economy.

When a company acquires a large share of control over a basic industry, it begins to fear the shadow of adverse government action. It must necessarily begin to restrain itself, to hobble its skill. We need all of the competitive skill we can get. We must seek to increase it, not restrain it.

My proposal is not made for the purpose of reducing General Motors' competitive strength. I do not make it because it would reduce competition for American Motors. Actually, it would *increase* competition. My proposal is made with the national need in mind, not American Motors' needs. It would not deprive customers of the benefits of mass production efficiency in the automobile or other



industries. Experience shows that the optimum efficiency volume is well below 25 or 35 per cent of the industry.

A point of grave national concern is that the championship level of General Motors' profits has become the focal point of the UAW's collective bargaining demands against the entire industry. The auto union has used General Motors' greater ability to pay to convince the public that the union's demands can be met by General Motors without serious financial difficulty. General Motors' settlements are then used as an industry pattern. A key question raised by the UAW collective bargaining strategy is "Are General Motors' profits too high?" This question must be answered to the satisfaction of the American public.

I think that, to find the true answer, people need to know this fact: Unless we are willing to substitute some other means of disciplining our economy for the principle of competition—and the only other means I know of involves absolute authority of either a public or private character—then the question of whether a particular company is making too much money depends on whether that company has adequate competition. If the company is earning the money in the face of an adequate number of competent competitors, then its profit becomes a measure of its efficiency and ability and a reward for its contribution.

Now what is the situation in this respect in the automobile industry? Mr. Yntema spelled out with great clarity before the Kefauver committee a year ago the fact that no automobile company other than General Motors has sufficient financial strength to be reasonably certain of continuity.

Citizens and consumers must be satisfied that profits being earned by a company are achieved in competition with an adequate number of competent competitors. Unless they are satisfied, those now attacking our economy may well be able to persuade the people that the government should intervene in some manner that will seriously impair the functioning of our competitive system. In this dangerous age, America cannot afford to have highly

efficient companies restraining their competitive efforts to avoid government action. Nor can the nation permit giant unions to continue to use the profits of General Motors or the steel industry as a target for uneconomic wage demands, which result in costly concessions that become the basis for pattern bargaining demands across American industry.

My proposal for economic birth has as its objective the further development of competition in this country. If we are to fulfill our economic goals, realize our Space-Age potentials, and meet the challenge of communism, we need to encourage the power of creative individuals and organizations—not smother that power by forcing them to conform to the dictates of unions and business concentrations that exercise an excessive degree of control. It is important to emphasize that the problem is not one of *size* or *bigness*. Bigness per se is not necessarily bad. Indeed, bigness is essential in a modern industrial economy. Under my proposal, a company would be as large as the nature of the industry required for efficient, competitive operation, and no arbitrary fixed limit is suggested. The problem is the degree of control over a major economic, social, or political segment.

Adoption of a birth policy would, I believe, again unleash the principal factors of industrial growth without enactment of new laws but simply modernization of the old. Paving the way for the elimination of the conflict in our national economic policy—the conflict between the competitive policy of the antitrust laws and the monopolistic policy of the labor laws—would result in the organization of employer and union responsibility on common economic principles of mutual interest and would end the economic conflict based on class warfare throughout American industry.

Finally, it would reduce the threat of government regulation and, by a more adequate division and dispersion of private power, decrease the justification for excessive concentration of federal power.

We are moving in the direction of governmental control resulting from the wage-price

spiral and from lack of confidence in the adequacy of competitive discipline. Such central control and regulation is the brute strength of communism. We must reverse this trend and stress the elements of freedom, human well-being, and self-realization ahead of sheer material abundance and security.

Thomas Carlyle once wrote, "It is the spiritual that determines the material." Woodrow Wilson seconded this: "This nation cannot survive materialistically unless it redeems itself spiritually." In the long run, this is true with individuals, organizations, and nations.

Again, one desperate need in this country is a political party that will dedicate itself to the fundamental principles of Americanism. These principles have from the beginning called for the dispersion and distribution of all forms of power—political, economic, and social. Unless Americans—and particularly American businessmen—are willing to speak out for the truth as they know it, and work diligently on the problems as they recognize them, there is no hope for our future. In Carl Sandburg's words:

"If America forgets where she came from, if people lose sight of what brought them along, if she listens to the deniers and mockers, then will begin the rot and dissolution."

The deniers and mockers who are already here and well organized cannot be defeated by silence, conformity, or expediency. It is not just what we are capable of accomplishing and producing that is in jeopardy; it is what we have *already* accomplished and produced.

We need to anticipate what America can do by preserving political freedom and by more effectively developing the principles of economic freedom on the basis of the mutual interests of business and labor. We need modern political, economic, and social pioneers and nonconformists who cannot be deterred by material plenty, political ambition, or social diversions. We need American pioneers with a national and world vision and a national and world identity based on a dedication to the principles of human liberty, social justice, world peace, economic abundance, and the divine rights of man.

WHAT does it profit a man to free the whole world if his soul is not free? Moral freedom is not an artificial condition, because the ideal is the mother tongue of both the heart and the senses. All that is requisite is that we should pause in living to enjoy life, and should lift up our hearts to things that are pure goods in themselves, so that once to have found and loved them, whatever else may betide, may remain a happiness that nothing can sully. This natural idealism does not imply that we are immaterial, but only that we are animate and truly alive. When the senses are sharp, as they are in the American, they are already half liberated, already a joy in themselves; and when the heart is warm, like his, and eager to be just, its ideal destiny can hardly be doubtful. It will not be always merely pumping and working; time and its own pulses will lend it wings.

—George Santayana

CHARACTER AND OPINION IN THE UNITED STATES (Doubleday Anchor Books)

## URBAN GROWTH in the NEXT 15 YEARS

*The expected growth will provide great opportunities for redevelopment.*

IF WE COULD start from scratch on a new continent, we would have an unlimited opportunity to create a new urban and agricultural structure in which new homes, stores, industries, office buildings, and government buildings could be placed in an ideal relationship to each other, to the automobile highway and mass transport systems, and to the rural areas. L'Enfant had such an opportunity for a single city in the planning of Washington, D.C., as did the planners designing the new capitals of Australia and Brazil. But instead of a clean slate, the people in the United States today confront urban and rural patterns of settlement that are the result of the largely unregulated efforts of millions of individuals working over a period of several centuries. The opportunity for planning is in the new growth expected in the United States in the next 10 to 20 years and in the gradual replacement of run-down areas.

*Mr. Hoyt is President, Homer Hoyt Associates, Washington, D.C.*

### OPPORTUNITY FOR PLANNING

The form of our cities has been shaped mainly by economic forces, or by what was conceived to be the highest and best use of the land at the time the buildings were constructed. The structures, however, have physical lives of 40 to 100 years or more; and before the end of their physical lives, new inventions, new modes of transportation, and new habits of living often render them obsolete. We have a conglomeration of old and new urban patterns superimposed upon each other, which sometimes gives rise to this type of wishful thinking:

"... could you and I with Him conspire  
To grasp this sorry Scheme of Things  
entire,  
Would not we shatter it to bits—and then  
Re-mould it nearer to the Heart's Desire!"<sup>1</sup>

<sup>1</sup> Edward Fitzgerald, trans., *The Rubáiyát of Omar Khayyám* (New York: Random House, Inc., 1947), p. 111.



Others plan for a future in which all existing structures will be worn out and a new, ideal plan ignoring all present buildings can be completed. It is, of course, impossible to tear down our existing buildings and replace them with new structures in the next 10 or 20 years.

Of the estimated total national wealth of \$1 $\frac{1}{3}$  trillion in 1955, \$664 billion, or half, was represented by structures. Our total new construction for 1955 was \$33.8 billion, or 5 per cent of the total building value. We have a total of approximately 55 million dwelling units valued at \$353 billion in the United States, and our new building has been at an average annual rate of 1.1 million units a year for the past ten years, or 2 per cent of the total number in existence.<sup>2</sup> The building industry is not now equipped to supply the labor and materials; the financial institutions are not prepared to furnish the mortgage funds; and the home buyers are not prepared to purchase, at present-day costs, the required number of houses a vastly enlarged program of home building would require.

Office buildings, stores, and factories, as well as apartments, are built in response to economic demand and cannot be constructed unless there is a sufficient number of tenants capable of paying an economic rent.

### *Population Growth*

Thirty years ago, on the basis of birth and death rates at the time, it was predicted that the population of the continental United States would increase to 155 million, and thereafter it would remain static or decline. As a result of the rapidly rising birth rate before and after World War II, the population of the United States in August, 1958 was 175 million and is now expected by the U.S. Bureau of Census to increase to 225 million by 1975,<sup>3</sup> a gain of 50 million persons or approximately 14 million

households. As a result of this formation of new households, there will be a demand for at least 14 million homes in the next 17 years.

By 1975, the remainder of the 20,264,000 dwelling units built before 1920 and still in existence in 1950 will be at least 55 years old. In 1950, 4,339,000 dwelling units were reported as dilapidated, and 5,133,000 had no running water.<sup>4</sup> Certainly 10 million, if not more, of our dwellings should be replaced by 1975.

The total demand for new residential dwelling units will thus be at least for 24 million during the next 17 years, or at the annual rate of 1.4 million units a year. By the year 2000, when the population of the United States is expected to reach 330 million, there will be a demand for 50 million more units than we have today.

What proportion of this total demand for housing will be self-financing—that is, what proportion of houses will be bought by families whose incomes will enable them to meet mortgage payments, taxes, and upkeep on new homes?<sup>5</sup>

Unless construction costs rise faster than real earnings, increasing rates of real earnings in the United States will enable a larger proportion of families to own their homes. Dr. Joseph L. Fisher of Resources for the Future estimates that the spendable income per capita, in terms of 1957 dollars, will increase from \$2,540 in 1957 to \$3,520 in 1975, a gain of 40 per cent in real buying power.<sup>6</sup> This would be equivalent to a family income of \$12,250 in 1975. A family with an income of \$12,250 a year could afford to pay \$30,625 for a house. An average family with an income of \$9,000 a year could then afford to buy a house costing \$22,500, or 2½ times its annual income after federal taxes.

<sup>2</sup> Compiled from Bureau of the Census reports. See also U.S. Bureau of the Census, *Statistical Abstract of the United States: 1957* (Washington: U.S. Gov't Printing Office, 1957), pp. 319, 752-78.

<sup>3</sup> Middle estimate. Compiled from Bureau of the Census reports.

<sup>4</sup> Compiled from Bureau of the Census reports. See also *Statistical Abstract of the United States: 1957*, pp. 752-78.

<sup>5</sup> In 1956, there were 1,402,587 public housing units, or approximately 2.5 per cent of the total number of dwelling units. *Statistical Abstract of the United States: 1957*, p. 765.

<sup>6</sup> From a speech given by Joseph L. Fisher at Lake Arrowhead, California.

### *Shopping Centers*

In the period 1948 to 1958, 50 new regional shopping centers with over 35 million square feet of store area, 120 community centers with over 26 million square feet of store area, and several thousand smaller centers were built in the United States.<sup>7</sup>

The 10 million new families moving into suburban areas from 1960 to 1975, with an average annual family income of \$9,000 a year, or an aggregate income of \$90 billion, will be spending \$60 billion in retail stores. To handle this volume at an average of \$100 in sales per square foot of gross store area would require 600 million square feet of building area. If there were a 4 to 1 ratio between parking and mall areas and gross building area, 2.4 billion square feet would be needed for these purposes, or a total of 3 billion square feet, or 69,000 acres.

Although it is impossible to predict the exact proportions to be allotted to different types of centers, a reasonable estimate might be: 60 new regional centers of 1 million square feet building area each; 200 large community centers averaging 200,000 square feet each; 500 small community centers averaging 100,000 square feet each; and 9,000 local neighborhood centers averaging 50,000 square feet. Thus, there would be a total of 9,760 new centers, covering a building area of 600 million square feet—this may indicate the magnitude of the problem.

### *Factory Buildings*

The number of manufacturing employees in the United States, according to one estimate, will increase from 16,756,000 in 1955 to 25,732,000 in 1975, a gain of approximately 9,000,000 workers.<sup>8</sup> Allowing an average of 300 square feet per worker would mean that a total of 2.7 billion square feet of new factory building space would be needed, practically all in one-story buildings. Allowing a 1 to 1 ratio be-

tween parking and factory area would mean that an additional 2.7 billion square feet would be needed for parking areas, or a total of 5.4 billion square feet, or 124,000 acres. Large industrial plants in the suburbs usually take a much greater land area for yard space and expansion than indicated by this 1 to 1 ratio, so that the above figure of 124,000 acres is the absolute minimum.

### *Office Buildings*

New office building construction bears no exact relationship to population, varying from 1.5 square feet per capita for the Los Angeles metropolitan area to 5 square feet per capita for the Chicago metropolitan area, 10 square feet for the New York metropolitan area, and 26 square feet for Midland, Texas (a city of 56,000 population, and the office center of the oil industry of western Texas).<sup>9</sup>

If the added population from 1958 to 1975 required only 3 square feet per capita, a total of 141 million square feet of new office building space would be needed, or 1,410 office buildings of 100,000 square feet each. If the office buildings averaged 10 stories in height, they would cover a ground area of 14.1 million square feet, and on a 50 per cent land coverage they would need a total of 28.2 million square feet, or 647 acres. In new office buildings, at least 500 square feet of parking should be provided for each 1,000 square feet of office space; thus, 70 million square feet of parking would be needed, making a total of 84 million square feet, or 1,930 acres, for ten-story buildings when all the parking is on the surface. Taking into account the prevailing trend toward the construction of small one- and two-story buildings for doctors, dentists, and other professional groups, the average height of new office buildings will probably not exceed five stories. The ground area covered by buildings would then be 28 million square feet, with the parking area remaining the same, or 70 million square feet, making a total of 98 million square feet, or 2,250 acres.

<sup>7</sup> Bureau of the Census reports.

<sup>8</sup> *Production Trends in the United States through 1975* (Menlo Park, Calif.: Stanford Research Institute), Table 11.

<sup>9</sup> Author's calculations.

## ANALYZING THE COMMUNITY

We have discussed so far only the aggregate demand for new structures in the United States for the period 1958 to 1975. However, buildings can be placed only in one fixed location, and usually it is uneconomic to move a structure. Consequently, it is of paramount importance to analyze the economic base of each community to determine which areas have prospects of growth in basic industries, such as manufacturing for export, the tourist business, trade with a wide area outside the city, and so on.

The Pacific Coast and Mountain areas are expected to grow at a faster rate than other parts of the nation because of the strength of their basic economic activities. The Stanford Research Institute estimates that the population of the Mountain states will increase from 5,762,000 in 1954 to 9,582,000 in 1975, a gain of 66 per cent; and the Pacific states from 16,733,000 to 29,439,000, a gain of 75.9 per cent. The rest of the United States is expected to increase its population from 141,393,000 to 182,733,000, or 29 per cent in the same period.<sup>10</sup>

*Location within Metropolitan Region*

Having determined which metropolitan regions will support new buildings, the next step is to select the most appropriate sites within the metropolitan region for the new growth.

The universal trend toward the suburbs makes more land available for all types of structures such as ranch-type houses, schools, churches, bowling alleys, one-story factory buildings, and the new-type shopping center—all of which also require extensive areas for parking. Even large office buildings, such as the Prudential Life Insurance Building in Minneapolis and the Connecticut General Life Insurance Building in Hartford, Connecticut, are now locating in outlying areas.

However, the increasing spread of suburbs

to points requiring an hour's travel time between home and place of employment has caused an increase of apartment building in central areas in the past year or two. Furthermore, management headquarters and companies related to finance, stock exchange, and central markets are ideally located within walking distance of one another and in buildings where vertical elevator transportation is quicker than horizontal transportation. Thus, the new metropolitan communities should achieve a balance between the central city and the suburbs.

*Economics of Urban Redevelopment*

Economic redevelopment of central areas that does not add to the taxpayer's burden is feasible when the demand for the new uses is sufficient not only to cover mortgage charges, operating expenses on the new buildings, and real estate taxes, but also to leave a sufficient residual net income for the land to justify the acquisition. The deficit between the acquisition cost and re-use value must not be too great, or the gap cannot be made up by federal and local grants.

Although there is a gain in plottage value due to the creation of new uses more profitable than the old, acquisition costs will include buying existing structures that still yield an economic return. These will be wrecked, thus greatly increasing the cost of the site. Also, the costs of new utilities, grading, and so on, must be added.

Consequently, for a central redevelopment area, intensive uses such as elevator office buildings, semiluxury apartments, stores, garages, hotels, and so on, must be developed, and for each of these uses there must be an economic demand at rates more than sufficient to cover interest, depreciation, and operating costs on new buildings.

In estimating the new demand, the supply of existing structures must be considered, and care must be exercised not to erect structures that will create vacancies and lower the value of downtown properties. Therefore, such

<sup>10</sup> *Production Trends in the United States through 1975.*



structures as single-family homes, one-story factories, and low- or medium-rent apartments are not ordinarily economically feasible for central areas that have structures on them still yielding an economic return. Industries, offices, stores, and amusement places that need these central advantages can pay rent sufficient to yield an economic return on urban redevelopment.

Downtown redevelopment for areas such as Bunker Hill in Los Angeles offers the golden opportunity planners seek. This area of 136 acres can be cleared of all structures and rebuilt, on a low land coverage, with an ideal grouping of office buildings, apartments, hotels, and shops, with garages adjacent to the buildings being served. All of this can be in one integrated area and have complete separation of pedestrian and automobile traffic.

There is a sound and legitimate reason for central city redevelopment, because the stores here offer the greatest variety and depth of merchandise; it is the central meeting place for the entire metropolitan area, the chief recreation and amusement center, the location of the courts and records, the focal point of all transportation media, and the headquarters center of an entire economic region (and in a few cities, of a continent). Although space here is at a premium, planning of new office centers like Rockefeller Plaza in New York shows the value of allowing open spaces even at the central core.

#### DEVELOPING NEW SUBURBS

In the ten years from 1948 to 1958, 10 million houses were built in the suburbs. While many better types of communities have been built with winding streets, cul-de-sacs, and the wider building lots preferred to the gridiron plan and the narrow lots of most pre-World War II housing developments, suburban development has still largely been the result of piecemeal building by separate landowners. Few complete suburban communities have been developed.

Suburban residential expansion has often proceeded as a solid mass extension from the older city. First, detached settlements were flung out dependent upon the use of individual septic tanks. Then, as the community extended central sewer and water utilities, the areas between the settlements filled in solidly with houses, leaving little or no space for recreation areas because the land served by utilities became too valuable to spare.

The building of 24 million new homes in the period from 1958 to 1975, of which possibly 20 million will be on the edges of existing communities, will afford the opportunity to plan thousands of new communities. If only half of this total, or 10 million homes, were constructed in communities with an average of 2,500 households, 4,000 new model planned communities could be created in the next 17 years.

The essential economic basis for these communities is the sewage disposal plant. Unlike water lines, central sewer systems cannot economically be extended over great distances of open country. Consequently, separate communities surrounded by green belts can be established over a wide area on the periphery of central metropolitan areas on the basis of sewage disposal plants for each community. Such community development is economically feasible and safe from the standpoint of health.

These communities would be of different types. Some would contain industries and shopping centers, as well as homes and recreation areas; they would be almost completely self-sufficient. Others might contain only homes for one homogeneous income group, and the residents would work in the offices and factories of the nearby city. Nearly all, however, would have a balance between single-family residences and apartments, which would enable retired couples or young families without children to live within the community. All the communities would have ample open recreation areas, not only within the built-up areas themselves, but in the surrounding open areas.

### *Shopping Areas*

The new regional shopping center of the mall type, on 50 to 100 acres of land, with underground service tunnels, is a triumph of architectural planning. Constructed on land in suburban areas acquired at relatively low cost, they are economically successful when a combination of department stores, apparel stores, and other fashion stores attract such a volume of sales that central downtown land values have been re-created on prairie sites. However, the high cost of two- or three-level department stores with escalators, service tunnels, parking areas, air conditioning in all stores, and de luxe store fronts, sometimes sets up such a burden of fixed charges that a high volume of sales is necessary to reach the break-even point. Thousands of smaller shopping centers of the strip type have been built at far less cost. These smaller units, however, are also more vulnerable to competition from the larger centers offering a more complete selection of merchandise. The new type of center of either the mall or strip type can be built in open country near the new residential areas that will develop beyond the dense body of urban settlement.

### *Vacation Areas*

The airplane has extended tremendously the area available for week-end and short holiday vacation trips. The piston engine plane made it possible for thousands of persons in the northern United States to take week-end vacations in Florida, Arizona, and California, and, on short holidays, to fly to the Caribbean Islands, Mexico, and Hawaii in the winter and to the western and northern United States and Canada in the summer. The jet planes will extend the range of vacation travel much further and enable one to go, even on a short vacation, to the islands in the Pacific, to South America, and to Europe. The economy rates on the new jet airliners have placed foreign travel within the reach of many family budgets. Thus, areas devoted to recreation in the United States will be competing in the future to a greater extent

with recreation areas in all parts of the world. However, the continuing shortening of the work week and increased leisure time will create an increasing demand for recreation areas within the United States.

### *Industrial Areas*

Factory owners now universally prefer one-story plants where all manufacturing operations can be conducted on one floor level, where trucks and railroad cars can deliver materials inside the plant, where the factory can be expanded on any side, and where there is ample yard space for storage and for parking. Since adequate land space is now of paramount importance, and since most workers now own automobiles and most shipments are by truck, industrial managers prefer locations in suburbs on belt highways, with railroad connections nearby.

The new type of industry in attractive landscaped grounds can be placed near high-grade residential suburbs, so that managers and foremen can live near their work—attractive surroundings for industry have become important assets in attracting engineers and highly skilled personnel.

### *New Office Buildings*

Office buildings for self-sufficient companies, such as insurance companies, can be located in parks and in large recreation areas. There will be ample parking space for the cars of employees and customers, and for the convenience of restaurants and cafeterias.

### *Future Land Planning*

Thus, in the wide-open areas around our old cities, a new urban-rural pattern is emerging. The residential communities with swimming pools, large recreation areas, and with the advantages of their own schools and community facilities will be separated by green belts from other communities, but connected to industries a few minutes away by belt highways. Large

regional shopping centers on belt highways or expressways will bring the shopping variety of the central city to their doors. Office buildings of insurance companies and other self-sufficient businesses will provide employment in nearby open areas. Families will live, work, shop, and play in large open suburban areas, far removed from the congestion and clamor of the old city.

Meanwhile, the center of the city itself—the old core—will be reconstructed with tall office buildings, apartments, and garages on a low land coverage surrounded by parks, with a complete separation of automobile and pedestrian traffic. The new reconstructed central areas will be the management, cultural, amusement, and major shopping centers of the far-flung metropolis. Here will live many couples without children, single persons, and retired families who prefer to live in apartments near central places of employment, shopping, and amusement.

#### *Conservation Areas*

After the slums near the center are cleared away, the present dense middle-aged conservation areas (or areas where most of the structures have 10 to 20 years of remaining useful life) between the central core and the suburbs will gradually be razed and replaced by new garden apartments in super blocks. Barring World War III, the dawn of the twenty-first century should usher in a new urban America, rebuilt according to the planning principles now emerging.

The entire land area used by urban and rural nonfarm structures is only 25 million acres, or 1.3 per cent of the land area of the United States.<sup>11</sup> Even with the most lavish use of open land, the area absorbed for urban purposes will not exceed 50 million acres, or 2.6 per cent of the land area in this country. The automobile and the express highways have opened up great areas of land within quick commuting of

central places of employment, so that the old urban pattern, restricted to a narrow compass within a few miles from the central railway depots or steamship docks by slow streetcar transportation, can be discarded.

#### FINANCING THIS PATTERN

Most of the new types of structures just described will pay their own way. Families will have sufficient income to buy most of the new homes and pay an economic rental on apartments; consumers of retail goods will pay for new shopping centers; and manufacturers will have sufficient earnings to pay for new factory buildings. The high level of national income—\$430 billion in 1975 in 1947 dollars, or \$473 billion in 1957 dollars<sup>12</sup>—should afford a sufficient margin for public expenditures for highways, public buildings, and urban redevelopment as well as for defense.

In 1958, the total expenditure for national defense was \$43 billion. In 1955, all governments, mostly state, spent \$6.5 billion on highways. From 1945 to 1956, the United States made foreign grants and credits in the amount of \$58 billion.<sup>13</sup>

Many of us would reason that we could rebuild the United States on an ideal pattern in a few decades with the amount spent for defense and foreign aid. While this is true if we could avoid defense expenditures, the fact is that we would face destruction as a nation if we neglected defense to rebuild our cities.

The question then becomes: Can we pile heavy subsidies for rebuilding on top of defense expenditures? If a complete subsidy were required, it would cost a minimum of \$20,000 per family to provide a new house, all utilities, new schools, churches, and streets for each family to be subsidized. This would amount to a subsidy of \$20 billion for each 1

<sup>12</sup> Bureau of the Census estimates.

<sup>13</sup> *Statistical Abstract of the United States: 1957*, pp. 405, 872.

<sup>11</sup> Bureau of the Census reports.



million families and \$200 billion for the 10 million families comprising the lowest one-fifth income group of our population.

In May, 1958, the federal debt had reached the staggering total of \$276 billion. We cannot increase our debt limit from \$276 billion to \$476 billion without bringing on certain inflation, which would reduce the value of the present 50-cent dollar to 25 cents, wipe out half the value of savings and insurance policies, and render social security payments totally inadequate to support retired persons.

This does not mean however, that all funds for urban renewal or public housing should be curtailed. Expenditures of \$10 to \$15 billion for urban redevelopment that can be repaid

out of increased tax revenues over a ten-year period, limited subsidies for properly designed public housing for well-deserving tenants, and highway expenditures to increase the efficiency of our highway system for civilian and military uses can all be supported by our ever-expanding economy. We have demonstrated that we can sustain a burden of taxation that would formerly have been regarded as stifling to all progress and initiative—\$75 billion a year for federal taxes alone—without lessening our productive efforts. Some reduction of federal expenditures or some increase in our real national income will provide a margin for the most needed urban redevelopment, slum clearance, and highway expenditures.

THE CLIMBING streets of this city (Central City, Colorado) still have an appearance of solidity. The two main thoroughfares consist of close-built rows of brick and stone business houses; space for the residences on the hillsides is gained by a series of massively stone-walled terraces. Many of the homes, and most of the mine buildings and mills, have been torn down . . . but enough of the original town remains to put one easily into the atmosphere of the bustling camp of the seventies and eighties, when 7,000 people lived in its houses, dug in its mines, and swarmed in its narrow streets.

—Muriel Sibell Wolle

THE BONANZA TRAIL

GEORGE J. STOLNITZ

## **Our Growing Population Threat or Boon ?**

*Will the population tidal wave bring  
a business boost or economic misfortune?*

**D**URING each of the past ten years, the American population has been increasing at the brisk rate of about 1.7 per cent. If sheer magnitude and stability of growth were as desirable as we are inclined to believe, the post-World War II upsurge in our numbers would be a happy turn of events indeed. Yet a continuation of the current rate would mean a population of 350 million by the end of this century and one of over 800 million by the middle of the next. Such numbers have an unreal and even alarming quality about them. They suggest overcrowded, impoverished areas like India or China, rather than a wealthy, space-rich nation.

Can we keep ahead of the population tidal wave that seems to be developing? Are reme-

dial policies necessary or possible? Or will the wave subside for its own sufficient reasons?

Not much more than a decade ago, most thoughtful observers were concerned that the United States was facing fairly imminent population decline and that the slowing up of growth before the decline had already become a force for economic stagnation. So-called positive population policies were widely proposed to arrest the trend. With large-scale migration a dead issue politically and death rates seemingly as low as could be expected, the chief policy target was to halt the fall in birth rates. Otherwise, it was believed, the influence of demographic developments was likely to be negative, both for high-level prosperity in short-run periods and for maximum economic progress in the long run.

Today, the prospects are drastically altered. Implicitly or explicitly, most of our decision-making leaders in business and government

*Mr. Stolnitz is Professor of Economics at Indiana University.*

are basing their long-run plans on assumed rapid population increases into the foreseeable future. Perhaps because the failures of the pre-1950 population projections are still too freshly with us, no one is seriously predicting a sharp downturn from the current level of growth. None of the recessions after World War II has had any noteworthy effect on birth rates.

Against this backdrop, a growing number of informed persons has begun to voice an opposite concern. The new fear is that a continuation of the present rate of increase could soon lead to substantial population pressures on resources, productive capacity, and levels of living. Even if future living standards would not actually fall because of overpopulation, they might rise much less rapidly than might be possible with smaller numbers.

Considered by any standards, the turnabout of American population prospects has been one of the momentous events of our times. What has been the nature of the event, and what have been some of its major consequences? Have the postwar trends thus far been a stimulus to our economic growth, as many believe? If so, why can we not expect similar benefits from rapid population increase in the future? Or are appearances deceiving, and is the real situation like that of the boy lost in the woods, who at each moment sought to conserve his strength by following the nearest path—and kept going in the wrong direction?

No one honestly believes that these questions can be answered with confidence, despite occasional pronouncements to the contrary. We can, however, take a closer look at the main facts and point more specifically to the question marks clouding the future.

#### THE DEMOGRAPHIC FACTS

The annual increase in our population is currently about 3 million. It has averaged 2.75 million over the past decade, and the 1960 census count will not fall far short of 180 million. The 1940-50 rise was the largest decennial increase of our history, and the 1950-60 rise is sure to be about 50 per cent higher. Convert-

ing absolute increases to rates per 1,000 population, the 16 to 18 per 1,000 levels typical from World War II to now have not been encountered since the turn of the century, when internal increase was being supplemented by the last of our great waves of immigration.

Each of these changes in total population size is simply the sum of two components: (1) net migration (immigrants minus emigrants), and (2) natural increase (births minus deaths). Dividing total change and its components by initial or average population size, we get a corresponding equality among rates; that is, the over-all rate of change is equal to the net migration rate plus the birth rate minus the death rate. (The distinction between initial and average population as rate bases can be neglected here.)

Although these relationships are mere accounting identities, they put us a great deal closer to the heart of the story. The size of the components of any change provides an initial basis both for explaining the immediate causes of the change and for assessing future possibilities. The leeways for policies affecting components and the criteria for policy assessment differ greatly among migration, mortality, and fertility, and the economic implications of any over-all change may depend as much on the particular components that brought it about as on its magnitude.

In particular, we need to consider changes in age composition. This, again, can be done only by viewing components. For example, given two populations with the same over-all growth rate, the one with higher birth and death rates is likely to have the larger fraction of its numbers in the younger ages and the smaller fraction in the labor-force years. In a period of deficient aggregate demand, the higher-rate pattern would tend to be unemployment-dampening, compared with the unemployment-enhancing effects of the lower-rate case. Speaking very broadly, the United States moved from approximately the first or higher-rate situation to the second during the period between world wars. And conversely, our demographic shifts from the



1930's to 1950's have almost certainly been more unemployment-dampening than would have been the case if the same change in numbers had come about from a smaller rise in birth rates and a larger fall in death rates.

### *Migration Trends*

The migration component of our recent growth trends can be treated briefly. The influence of this factor has not been small, the change in the net migration rate from a negative to a positive quantity between the 1930's and 1950's accounting for about one-third of the corresponding change in the over-all rate. However, the prospect for substantial future contributions from this source is limited. A decline of net migration to zero would reduce the over-all rate by only one-tenth. Although the picture could be changed by a tremendous rise in net immigration or by large-scale net emigration, either possibility seems so unlikely as to be of no practical interest.

This is not to deny that our migration policies may have important specific consequences. For instance, the whole course of the last war, and even its outcome, might well have been different had we not opened the door to many of the skilled scientists seeking refuge in the 1930's. But these involve individuals, not demographic issues. Judging by all appearances, the overwhelmingly primary component of our future population trends will be natural increase.

### *Mortality Rates*

With regard to mortality, the effect on our recent growth has been unexpectedly large. The death rate has fallen by about one-seventh since the 1930's, thereby widening the gap between prewar and postwar over-all rates of change by about the same margin. Moreover, the decline would have been much larger, perhaps as high as one-third, but for shifts in age composition, which have tended to obscure the size of the movements in mortality proper.

Such movements are better summarized by the familiar actuarial measures of life expect-

ancy. Expert opinion before World War II was that the average American lifetime could not be expected to go much beyond the biblical limit of threescore and ten in the foreseeable future. Today, we are already at that level for combined sexes and well beyond that level for females. Incidentally, the stronger sex continues to become weaker, as the comics have been telling us all along. The difference between male and female life expectancy has been widening steadily for a generation and is now at the highest point in our history.

Although there is still room for significant improvement in infant mortality, which is above that found in a number of countries, any really dramatic future changes in over-all mortality must await developments at the older ages. Well over half of our deaths come from the over-65 group, which comprises less than one-tenth of the population, and more than four-fifths come from those over 45. We are so close to zero mortality at the younger ages that, even if mortality were suddenly eliminated for all persons under 45, life expectancy would rise by only five years. This is not negligible, of course, but it is no more than the gain we have actually experienced since as recently as 1940.

A further prospect should be discussed in this same connection. For a generation at least, possibly for the better part of a century, American gains in survival chances have followed a classical age pattern, with the largest gains in infancy, the smallest in adolescence and young adulthood, and intermediate gains at the old ages. The effects of this pattern on age composition have been to raise the proportion of the population in the preadult ages somewhat, lower it in the main years of labor-force activity, and raise the relative number of aged. The over-all result, surprisingly enough, has been to reduce, not raise, the average age of the population.

Along with most Western countries, however, we are fast approaching the time when further survival gains as such (apart from migration and birth-rate trends) will necessarily increase average age. Some consequences will

be to raise the fraction of older members of our labor force and to enhance the relative importance of markets and industries serving our older population. Under existing retirement and employment practices, a further result will be to raise the ratios of aged nonworkers to workers.

These effects will occur even if future survival gains at advanced ages are moderate. They will be greatly reinforced, of course, if the dramatic break-throughs against old-age diseases that are being predicted by some experts should actually come to pass. There is little basis as yet for judging the reliability of any broad forecasts in this general area, but a bit of historical perspective provides a cautioning note. American mortality trends have probably not differed greatly from the trend patterns typical of other Western nations, and these show a century-long rise in life expectancy beyond age 60 of about five years. The 100-year figure that is often cited today as an attainable average full lifetime has the little-observed implication that life expectancy at age 60 will have to increase 5 to 10 times more rapidly in the coming century than it has in the last.

In any event, the problems that may result from further mortality gains will be happy ones. Our perennial traffic madness to the contrary, we continue to be eager as individuals and as a nation to prevent illness and prolong life. If a single broad prediction can be made with certainty in the social sciences, it is that any increase in numbers and any changes in age composition resulting from further mortality declines will be welcome—whatever the accompanying cost. The flexibility of our policies for achieving still lower death rates is not endless, but the rigidities on the upward side are essentially absolute.

#### *Rising Birth Rate*

In short, the main questions about the desirability of continued rapid population growth in the future really center about the chief source of growth in the recent past: the rising birth rate. The baby boom has turned into a

steady roar, undiminished by the incredulity of the large majority of experts. For a decade, the birth rate has hovered at about 25 per 1,000 despite the declining fraction of population in the child-bearing ages, and long after the time when the "making up" of births postponed by depression and war should have ceased to be significant. The rise of one-third in the birth rate since the 1930's has contributed well over half of the rise in the over-all rate of growth.

Current cross sections of birth rates by age imply lifetime aggregates of children ever born per woman that have not appeared in the time series of such measures in over a generation. Direct measures of lifetime reproductive performance, although more useful, are harder to obtain, since they require that the childbearing records of successive birth groups of women be traced over lengthy periods. However, the best evidence at hand indicates that the time series of these measures has also been moving upward. If these increases are mainly the result of the "lost opportunities" for raising families in the depressed 1930's and during World War II, they also constitute the first reversal of a downtrend that had lasted for at least a century.

A significant aspect of these trends in the aggregate is that the greatest increases have occurred in the very population sectors among which planning of family size is most widespread, and where the pre-1940 birth rate had been lowest. While current and lifetime childbearing continues, as in the past, to be inversely related to income, education, and status within the occupational hierarchy, the differences have narrowed appreciably. Current discussions of our population movements often overlook the fact that this upsurge has been basically a rational phenomenon, representing conscious choices by a nation that by and large believes in controlling family size. The relative number of large families has continued its prewar downtrend in recent years, even while the number of childless families has declined sharply. We also need to remember that the birth rate can fall about as rapidly as it has

risen if future conditions warrant a shift from current choices.

A second interpretive point to be kept in mind is that the dimensions of choice are several. There is no simple 1-to-1 relationship between the birth rate and desired family size. Probably well over half of the rise in birth rate since the 1930's is attributable to the combined influence of declining age at marriage and declining time spans between marriage and first birth. Neither of these influences may turn out to have much to do with the total number of children ever born to our current or future parental groups.

Another substantial part of the rise in birth rate stems from declining childlessness. This does imply a larger average size of family, but it proves little or nothing about our alleged new preferences for large families. Perhaps no more than one-fifth of the birth rate increase since the 1930's is explained by the increases so far noted in the average family size of couples with children.

This means two things. Since age at marriage and interval to first birth cannot be expected to fall much further, the birth rate could show a considerable downturn during the 1960's unless reinforced from other directions. A recent estimate suggests that the fall could be as high as 20 per cent, although it is well to note that similar estimates have been made for a decade—and been consistently wrong.

Second, and more important, even small shifts in desired levels of lifetime reproduction can lead to massive swings in annual numbers of births. Over short or intermediate periods, the timing aspects of our size-of-family decisions may have a far greater bearing on the trend in numbers than do the size aspects. Population policies designed to influence our demographic growth would have to cope with both aspects or run the risk of miscalculating by tremendous margins.

#### *Age Composition*

Some indications of the population magnitudes at stake can be seen from recent and

prospective changes in age composition. The proportion of the population under age 15, which by 1940 had fallen to 25 per cent after at least a half-century of decline, is today over 30 per cent. An equal and opposite shift has taken place in the case of the 15-30 group. On the one hand, the number entering grade school has averaged 50 per cent higher in the 1950's than in the 1930's. On the other hand, the number reaching 18 to 21, the main ages of entry into the labor force, has declined by nearly 10 per cent.

In 1956, the ratio of labor force to persons 14 and over reached its highest level since the end of World War II, possibly the highest since we became an industrial nation. Yet the ratio of labor force to total population was lower than in 1940, when the work force was relatively oversized compared to the number of consumers. The relative number in the main ages of economic dependency (persons under 15 and over 65) is currently close to 40 per cent, or higher than at any time during this century. We are far from understanding the full implication of these events, which in fact have gone almost unnoticed.

The number in the 18-21 group, who are especially vulnerable to fluctuations in employment conditions, has changed little throughout the 1950's. In contrast, the coming increases in this group, by one-fourth between 1960 and 1965 and by another one-third in the decade following, will enhance both the opportunities for raising productive capacity under full employment and the risks of dislocations from unemployment. Viewed from another angle, the growth of this group will also represent almost a doubling of our college-age population between 1957 and 1975.

The 25-44 group will remain virtually constant during the 1960's, while the 45-64 group will grow by about one-sixth. The resulting rise in average age of our labor force should have the effects, among others, of reducing "quit" rates, easing competitive pressures against seniority claims, and raising the ratio of fringe benefits to the total wage bill. By the same token, the sharp spurt of numbers in the



20-44 group between 1970 and 1975 will have approximately the opposite effects. The size trends in this group will also tend to depress the birth rate over the next decade and raise it measurably after 1970.

### *Census Projections*

All of these transformations are backward-looking with respect to the birth rate. Much of the impact of our current and coming population trends will hinge on the fertility patterns in the future. Here, one can only be certain that the magnitudes will be enormous, and that our current uncertainties about them are almost as great. The latest "high" projections by the Bureau of the Census suggest that the number of births in 1960-75 would total 85 million if the rate were to rise somewhat above current levels. The number would be 77 million if current reproductivity patterns persisted, 68 million if we returned to 1950 patterns, and 58 million if we returned to the patterns of the early 1940's.<sup>1</sup> Because of this factor alone, the resulting high-low projections of total population for 1975 differ by about as much as the entire rise in our population over the past decade.

The same census report is also careful to point out that the actual 1975 figures may not lie within the indicated range, wide as it is. Clearly enough, the authors of the projections are taking few chances—an attitude not always given its deserved attention by economic forecasters making use of such projections.

One noteworthy point does emerge, however. Even the smallest of these figures implies an annual number of births that is only 8 per cent below the current level. The largest figure is one-third above that level, and the second largest, which seems a more reasonable upper limit, is one-fifth higher. Unless we are close to a precipitous decline in birth rates, as unex-

pected as the postwar rise would have appeared in 1940, the annual population increment from births will continue to be very substantial for decades to come.

## SOME IMPLICATIONS

### *Boost to Business*

It is a rare statement on economic outlook these days that does not emphasize demographic factors. The president of one of our top five industrial firms, when asked why his company had been expanding its capacity at a time of production cutbacks, retorts that his critics were forgetting about Cribtown, U.S.A. A recent review of future energy requirements starts with the assertion that the most important determinant will be population; "the growth of all economic activity is keyed to the compounded expansion of the number of people."<sup>2</sup> A paper published a few years ago in the *Harvard Business Review*, under the misnomer "Population Threatens Prosperity," in fact accepts the idea that rapid demographic growth may stimulate prosperity over cyclical periods, but argues that such growth endangers rising levels of living in the longer run. According to another economist, our major economic problem of the next 20 years will be to pay the price of our higher birth-rate patterns.<sup>3</sup>

That our population acceleration has been a tremendous boost to business activity and a major support for employment since World War II seems beyond doubt. The difference between the numbers that could have been expected from a continuation of prewar trends and the actual postwar numbers has amounted on the average to over 10 million annually.

<sup>2</sup> Frederick G. Coqueron and others, *Future Growth of the World Petroleum Industry* (New York: The Chase Manhattan Bank, Petroleum Department, 1958).

<sup>3</sup> Robert J. Lampman, "Paying the Price for Higher Fertility," in *Problems of United States Economic Development*, Vol. II (New York: Committee for Economic Development, 1958), pp. 339-46.

<sup>1</sup> U.S. Bureau of the Census, *Current Population Reports* (P-25, No. 187; Washington: U.S. Gov't Printing Office, 1958).

According to my estimates, using longer-run trends in spending per capita for selected outlay categories, this difference in numbers has amounted to a difference in demand for output of at least \$15-20 billion annually between 1947 and 1957, in constant 1957 dollars. These estimates cover consumption, residential non-farm construction, and school construction. Inclusion of additional demand categories more or less closely related to population, such as public utility investment or government outlays for educational, police, and similar services, would raise the figures to probably well over \$20 billion annually; and even a conservative allowance for induced investment effects would add several billion more.

All in all, more definitive estimates might well show the demand effect of our changed population trends to have approximated some \$25-30 billion annually between 1947 and 1957, again in 1957 dollars. The range of values from \$15 to \$30 billion comprises from one-fourth to one-half of gross private domestic investment over the same period.

#### *Effects on Employment*

In addition, what we might call the employment effects of our recent population growth must also have been very considerable. Whatever the specific demand effect, its corresponding employment effect would be essentially neutral if acceleration in total numbers meant a corresponding increase in labor force. The absolute scale of employment would be raised, but so might the scale and rates of unemployment.

In fact, as noted previously, the situation has been very different, involving substantial shifts in age composition. The ratio of total population, hence consumers, to labor force is 5 to 10 per cent higher than could have been expected from a projection of pre-1940 trends. Other things being equal, this amounts to 5 to 10 per cent added labor demand per person in the working ages. Such orders of magnitude match or exceed the highest unemployment rates in the postwar period.

#### *Effect on Our Economy*

If our population upsurge has been good for business, has it been bad for the economy? Those who think we are today, or will soon be, beyond an optimum population size stress supply factors rather than demand, and per capita income rather than absolute income. They point out that the main source of our recent rapid population growth has been a high birth rate, which should tend to reduce income per capita. For the future, increases in the labor force will require large investment per worker merely to maintain efficiency, and added numbers at any age will be a further drain on natural resources. Although population increase under some circumstances might provide offsetting economies of scale and specialization, we are presumably numerous enough by now to gain all the important benefits we can expect on these scores.

A difficulty with these arguments is that they try to claim too much. All but the last of the points just discussed would make it appear that any population increase is an economic misfortune. If births are uncompensated claims on national income in the short run, they are also the source of our labor force at a later time. Efficiency-maintaining investment can bring multiplier effects no smaller than other forms of investment and can stimulate research and investment ventures that are efficiency-enhancing.

The traditional fear since Malthus that population growth can outrun food supply has no relevance to the American economy today or in the foreseeable future. Indeed, the rise in population growth rates has been a considerable factor for easing surpluses in agriculture, although this may be a cause for rejoicing only because we persist in being so foolish. Coal is not in short supply. Our water-shortage problems are brought about mainly by our geographic distribution patterns rather than by our size. In the past, our increased demands for natural resources have had a way of solving their own problems of supply, through the encouragement of exploratory activities and

through conservation practices at the mine and in the factory. On the average, relative prices of raw materials have not risen substantially in this century, despite tremendous increases in consumption.

It is also true that the demand and employment effects previously noted can be misleading on their own side. The main question here, and one that cannot be answered, is whether the added demand from comparatively rapid population growth has eased the problem of full employment in the last decade or whether the employment record would have been as favorable with a slower rate of growth. Under the first possibility, it could be claimed that our population upsurge has paid its way, in part or entirely, on the supply side as well. Under the second assumption, the upsurge would have to be regarded as a source of inflation and a depressant of levels of living. Skipping the subtleties of the many possible in-between situations, my own judgment leans strongly toward the first of these directions. No doubt we could have achieved equally full employment under less buoyant demographic influences, but at the risk and probable cost of far greater intervention and countercyclical activities by government than we have experienced in fact.

#### *Future Considerations*

A look into the future leads to some conclusions that are similar and some considerations that are new. Rapid population growth will surely be more favorable than slower growth from the viewpoint of demand effects on business. An added demand of \$2,000 per added person by 1975 does not seem an unreasonable estimate, give or take a fraction, if we consider increases in living standards. On the supply side, unless defense requirements rise tremendously, our productive capacity should be able to support rapid population growth, our traditional pace of uptrend in levels of living per capita, and, in addition, adequate investment per worker. Employment effects, as measured by the trend in the ratio of total population to working-age population, would

be smaller than recently but positive if current birth-rate patterns were to continue for the next two decades, and negative if these patterns declined to the levels of 15 or 20 years ago.

The potentially unfavorable side of further rapid population increase can be illustrated by turning these ratios around and considering the ratio of working-age to total population. By the 1970's, the ratio would be 5 to 10 per cent higher under a constant birth rate than under the preceding pattern of declining birth rates. Other things being equal, this would mean a 5 to 10 per cent loss in annual per capita income. The loss would be smaller or could even become a gain if more rapid population growth brought with it fuller employment (or equally full employment at lower social costs), greater productivity advances, and a higher rate of labor-force participation. The loss would be greater if more rapid growth affected the same factors adversely in a net way. The main possibility here is that productivity gains might be dampened by a greater application of our output to consumer purposes.

Probably the demand and employment effects of more rapid population growth would operate to reduce the difference below 5 to 10 per cent, but so little is known about these relationships that one can hardly be more than intuitive about them. In any event, we have to accept the possibility of an adverse income effect, and the effect might increase over time.

#### CONCLUSIONS

Are the risks or, should this be the case, the actual costs of rapid population growth excessive? And if so, is there a need for policies to lessen the growth, essentially by seeking to discourage fertility?

It seems to me that the sensible answer is in the negative, at least for the present and for some considerable time to come. Whatever the true costs may be, they do not appear sufficient to reduce levels of living, or even to prevent increases in such levels at the trend rates experienced in the past.



Moreover, as one economist has put it, "Marriage and children constitute an integral part of the real standard of living of most Americans."<sup>4</sup> The economic burden of earlier marriage and more babies, much like that of greater leisure, has so far clearly been outweighed in our individual evaluations by the benefits. Should the balance of advantages and disadvantages change, there is every evidence that the American people will be both willing and able to adjust the birth rate downward. To compare the American situation with that of underdeveloped areas undergoing rapid population growth is utterly misleading although often done.

Finally, we are completely without experi-

<sup>4</sup> Joseph S. Davis, "Our Changed Population Outlook and Its Significance," *American Economic Review*, XLII (June, 1952), 304-25.

ence about feasible policies for depressing the birth rate, even if we wanted to do so. This is one instance where it would seem far wiser to rely on the judgment of the nation as individuals than on the nation's political agencies.

It is perhaps unnecessary to repeat that these comments deal with the birth rate in the aggregate. The important job of counteracting some undesirable consequences of its distribution by sectors is another matter, requiring substantial involvement by all levels of government.

I conclude that the alarmist opinions being increasingly encountered in our public forums are largely undocumented, very probably exaggerated, and almost certainly premature. There are sufficient reasons to cross this particular bridge later—if and when the occasion arises.

THE LIFE of man in society, just like the life of other species, is a struggle for existence, and therefore it is a process of selective adaptation. The evolution of social structure has been a process of natural selection of institutions. The progress which has been and is being made in human institutions and in human character may be set down, broadly, to a natural selection of the fittest habits of thought and to a process of enforced adaptation of individuals to an environment which has progressively changed with the growth of the community and with the changing institutions under which men have lived. Institutions are not only themselves the result of a selective and adaptive process which shapes the prevailing or dominant types of spiritual attitude and aptitudes; they are at the same time special methods of life and of human relations, and are therefore in their turn efficient factors of selection. So that the changing institutions in their turn make for a further selection of individuals endowed with the fittest temperament, and a further adaptation of individual temperament and habits to the changing environment through the formation of new institutions.

—Thorstein Veblen

THE THEORY OF THE LEISURE CLASS

F. J. McDIARMID

## Can Life Insurance Adjust to Inflation ?

*Basic technical changes in the nature  
of insurance investments should be made.*

**T**HE LIFE insurance business as we know it today had its beginnings as far back as 1763, when the still prominent Old Equitable of London was founded. By 1840, the first level premium life insurance companies were being started in this country. During the period from the Napoleonic Wars to World War I, life insurance reached a high stage of development, along with such other financial media as bonds, mortgages, and preferred stocks. Even up to World War II, this period was marked by stable money values in which the currency unit proved to be a reasonably satisfactory unit of account over long periods.

During inflationary periods of these years, such as the Civil War and the time immediately after World War I, our dollar lost well over half of its purchasing power as measured by wholesale prices. But these losses proved tem-

porary and, within a few years, the dollar proceeded to regain nearly all of its lost value. For example, taking the period 1910-14 as 100, the wholesale price index of 30 basic commodities in 1814 was 221, but by 1830, it was 98; in 1864, the index was 253, but it had declined to 104 by 1880; and, although the 1920 index was 231, the 1930 index was 118.

Since 1940, however, our dollar has lost over half of its value, and most other currencies of the world have fared even worse. Even more serious, these currencies, including our dollar, show no tendency to regain any appreciable part of their lost value, and further loss in value is considered likely by many students of the subject.

### INFLATION HEDGES

This inflationary trend, which threatens in the long run to destroy our economic and social fabric, is something to be resisted by all the

*Mr. McDiarmid is Vice President-Investments of the Lincoln National Life Insurance Company of Fort Wayne, Indiana.*

means in our power. However, there does seem to be a case for hedging against the continuance of inflation insofar as life insurance is concerned, by making such adjustments in the technical structure as present-day conditions seem to require. If the life insurance industry is to continue to perform fully the role that it has performed in the past, some attempt to merge life contingencies with equity investments and to depend less exclusively on fixed currency investment media seems necessary in order to give policyholders an inflation hedge in life insurance contracts. The alternative would seem to be for the business to become increasingly a provider of term insurance, while its savings aspects, which have been very important in the past and very beneficial to our economy as a whole, decline in importance both relatively and perhaps absolutely.

Such a trend toward term insurance is already apparent in the structure of life insurance in force. By the end of 1946, 79 per cent of total life insurance in force in this country was in whole life and endowment plans, the kinds of insurance that produce asset accumulation; 20 per cent was in term plans, including group insurance, that produce little in the way of assets. By the end of 1957, whole life and endowment insurance had shrunk to 54 per cent of the total, and term insurance had risen to 45 per cent of the total. Whole life and endowment insurance in force increased 90 per cent during the 11-year period, a growth that did not quite keep pace with that of the gross national product or disposable personal income in this country. However, in the same period, term insurance, including group insurance, increased 520 per cent.

Because of this change in the type of life insurance in force, the rate of growth in life insurance assets appears to be slowing down. From a peak in 1954, when it was close to \$6 billion, it has declined in each succeeding year, and was 11 per cent lower in 1957 than in 1954. In view of the rising trend of dollar incomes and savings of individuals, it seems that life insurance has tended to become a less favored medium for the accumulation of savings.

#### MONEY AS UNIT OF ACCOUNT

The technology of life insurance as it has existed up to the present has been based largely on a combination of life contingencies and contractual-type investments, mainly bonds and mortgage loans. Its structure has been based on the conscious or unconscious assumption that the currency unit over an extended period of time would provide a reasonably satisfactory measurement of value or purchasing power. This assumption was necessary because, in the case of many types of policy contracts, long periods of time tend to elapse between the collection of premiums and the payment of benefits.

The reason for these time lags in the case of whole life policies is that premium payments are made evenly over the premium paying period of the policy, while claim payments are heaviest at the older ages in accordance with the upsweeping mortality curve. In the case of limited payment plans, all premiums are paid in the earlier policy years, and these influences produce a maximum time lag. In the case of group insurance, or term insurance for relatively short terms, there is little average time lag between premium collection and benefit payment. However, for retirement annuity contracts entered into at a relatively early age, this average time lag may cover several decades.

Some of these time intervals between payment of premiums and collection of benefits, especially in the case of retirement annuities and limited pay life plans, are sufficiently long to permit inflation to bring about a serious erosion in the values that the policyholder is seeking to establish.

#### PRICES SINCE 1941

The most widely used and one of the most meaningful indexes of the purchasing power of the dollar currently available is the consumer price index, which is designed to take into account all items that normally determine the cost of living. From December, 1940 to December, 1958, this index climbed from 59.9



to 123.7, indicating a decline in the value of the dollar of about 52 per cent. This is equivalent to an annual discounting of this value at the rate of over 4½ per cent, but was not, of course, uniform over the period (Table 1). It would probably be unwise to project this particular annual rate of inflation into the future at this time, because it arose in large part from the creation of a very large amount of new money through deficit financing during and immediately after World War II.

TABLE 1  
Decline in Value of U.S. Dollar

Period of Time	Total Decline in Period (per cent)	Annual Compounded Rate of Discount (per cent)
December, 1940- December, 1958	52	4½
Wartime (1940-45)	22	5½
Immediate postwar (1946-48)	25	10
Stable period (1949-50)	No Change	0
Korean Conflict period (1951-52)	10	5½
Stable period (1953-55)	½	½
January, 1956- December, 1958	7½	2½

SOURCE: Author's calculations based on CONSUMER PRICE INDEX of U.S. Department of Labor.

Barring a great expansion of the money supply as a result of war or some other catastrophe, one would expect a slower average rate of inflation in the future. Such deficit financing as may occur in the foreseeable future will probably be on a smaller and less inflationary scale than that which caused the inflation of the 1941-48 period.

The pattern of prices during and immediately after World War II followed those of comparable periods in the past, but here the resemblance ceased. There has been no indication of a price decline such as followed the Civil War and World War I. Instead, our price level now seems to operate on a kind of ratchet system; it goes up and then becomes stabilized

at the higher level until it is ready to go up some more.

Value once taken out of the dollar does not tend to be restored. Following two years of stability in 1949-50, the conflict in Korea took 10 per cent from the value of the dollar, probably permanently. Then, after three years of a stable cost of living, prices again began to rise. This last rise is probably the most disturbing of all, as it took place during a period of a balanced federal government budget, in a time we have come to regard as peace and in an administration originally dedicated to sound money.

## CURRENT OUTLOOK

The forces that seem to be working toward declining value in our money stem from the kind of world in which we are living, and will be only briefly summarized.

1 We live in a disordered world, necessitating huge government budgets swollen principally by expenditures on armaments, which are nonproductive. The current armament race, accelerated by the advent of ballistic missiles, is entirely inflationary in its impact upon the value of our money, and will throw an increasing strain on government budgets.

2 The strength and militancy of labor unions have led to a wage-price spiral in which wage increases tend to outrun increases in productivity. Throughout large areas of industry, substantial hourly wage increases coupled with costly increases in fringe benefits are now regarded as a normal annual event. Under these conditions, price increases inevitably follow wage increases.

3 Economic pressure groups are an inflationary force tending to increase both prices and government spending. Farm price supports are a well-recognized example. Other pressure groups oppose the use of such fiscal weapons as higher interest rates as a means of combatting inflation. We have recently seen how promptly such weapons are sheathed at the slightest sign of deflation and before any drop in the cost of living has been experienced.

4 The nations of the world and their currencies are no longer subject to the discipline of the international gold standard. Under the classic working of this standard, if prices within a country rose unduly, imports rose, exports fell, gold departed, and credit was restricted. The process was usually accompanied by some unemployment and economic discomfort, and this tended to deflate prices back into line. Today, currencies are exclusively the creatures of governments and are subject to very little automatic discipline from outside.

It is doubtful if most Western democracies are in a frame of mind to submit to the type of discipline necessary to avoid inflation. Our experience in the recent business recession would certainly indicate that they are not. Public works and tax cuts were widely proposed, even when this meant budget deficits that could only be met by the expansion of bank credit, and would in turn tend to provide the fuel for further inflation when the climate is right. Apparently, when a modern government must choose between the maintenance of full employment and a stable currency, indications are that it will generally choose the former.

Considering all of these conditions, our present place in history is in sharp contrast with the only period on record when the modern world experienced relatively stable money value, the century from 1815 to 1914. During that period, we had a relatively peaceful world, wars tended to be localized, and military establishments consumed only a small part of total productivity. Government budgets were low; and, in the *laissez-faire* economy of the time, the recognized economic responsibilities of governments were strictly limited. For example, the maintenance of full employment was not then recognized as a governmental function, nor was the maintenance of prices of basic commodities. From 1911 to 1915, the annual expenditures of the United States government averaged \$720 million, which is well under 1 per cent of the present dollar level of such expenditures. Of this, \$333 million was for the Army and Navy; \$165 million was for

veterans' pensions; and \$222 million covered everything else. The fact that money was able to retain its purchasing power under such conditions provides no basis for a belief that it can be made to do so under the entirely different conditions that now prevail and that contrast so strikingly with those of the preceding century.

#### BRITISH INVESTMENTS

When faced with such a dilemma as now confronts the life insurance industry on this continent, it is interesting to observe how others in somewhat similar circumstances have reacted.

In the United Kingdom, the postwar rate of money depreciation has resulted in a decline in the purchasing power of the pound to about one-third of its 1939 value. This inflationary trend has undoubtedly had a substantial effect on the investment policies of the British life insurance companies. By the end of 1957, 43 British insurance offices had on average 17.7 per cent of their life, annuity, and capital redemption assets represented by common stocks at book value, and another 9.1 per cent represented by real property, or a total of nearly 27 per cent of assets in equity-type investments.

By the end of 1957, one British life company had over half of its assets in common stocks and property combined. The highest proportion of assets in common stocks alone was that of the Scottish Widows, a 150-year-old company that had 41.4 per cent of its assets thus invested. These equity percentages represent book values and might be higher if taken at market values.

The book value of the common stock holdings of this group of 43 companies has more than doubled over the five years ending with 1956, against an increase in their total assets of 43 per cent. The increase in the book value of their common stock holdings accounted for 27 per cent of their total increase in assets over the seven-year period ending with 1957.

However, one does not need to look abroad for a similar trend in the handling of funds

accumulated for the purpose of providing social security in its broader sense. Uninsured corporate pension funds in this country have become heavy purchasers of common stocks, and, on a relative basis, such stocks are the most rapidly growing part of their assets. Based on market value, common stocks constituted 30 per cent of the assets of uninsured corporate pension funds at the end of 1957; in that year, 37 per cent of the net receipts of such funds were invested in common stocks, a higher proportion than in any preceding year.

#### NEW INVESTMENT MEDIA

The ultimate justification for investing life insurance reserves largely in contractual obligations payable in a fixed number of currency units must lie in one of two assumptions. Either the currency unit is expected to maintain its value fairly well over extended periods of years, or the fixed rate of return received is designed to contain an element to offset the declining real value of the principal. To rely on the latter premise might prove unsatisfactory, since it requires an advance judgment of the rate of expected inflation and might require the imposition of interest rates that would appear usurious.

In the future, therefore, should money not promise to serve as a reasonably satisfactory unit of long-term account, we are at least encouraged to search for more satisfactory repositories of value than contractual investments payable in money. To accomplish this is not likely to be an easy task, and it is not to be expected that it can be accomplished to perfection. However, the fact that a task cannot be performed perfectly is not a good reason for failing to attempt it at all.

The two types of equity investment media that suggest themselves as at least partial substitutes for contractual money investments are real property and common stocks. The former, if it is to serve its purpose in this respect, cannot be subject to long-term lease rental payments in a fixed amount of dollars. In such a case, it would become just another contractual

money investment. The rental must either be subject to frequent adjustment or be geared in some way to the earning power of the property. In the case of property used for retail purposes, it might be geared to sales, along with provision for some minimum level of rentals. The profitable ownership of a large amount of real property on this basis would raise management problems of substantial proportions that not all life companies may be prepared to undertake. However, considerable scope undoubtedly exists for this type of equity investment, particularly on the part of the larger companies.

Probably a much broader field for equity investment exists in common stocks or shares. While these are by no means a perfect hedge against inflation—in the past, their market values have tended to fluctuate much more widely than has the cost of living—they are about the best large-scale media available for this purpose.

#### SOME CALCULATIONS

Equity investments and, most particularly, common stocks might be introduced more widely into the structure of life insurance by two approaches. The companies could continue to sell policies on a fixed dollar basis, at the same time adding substantially to their common stock holdings. The long-term capital appreciation and ultimately higher rates of return that would be expected to result from such a policy could be reflected in more liberal dividends on participating policies. If such higher dividends were paid in the form of paid-up additions to the face value of the policy, as is the most usual practice in Great Britain, this would, of course, provide some offset to inflation.

To accomplish an increase in equity investments in this way, two things would probably be necessary. State investment laws in many cases would have to be liberalized. Also, some smoothing formula for the valuation of common stocks would probably be required if liabilities were to be rigidly valued and company



## 87-Year Study Shows Long-Term Behavior of Common Stocks

SOME facts concerning the long-term behavior of common stocks are revealed by a study of an index that goes back over a period of 87 years. This index is based on the Alfred Cowles & Associates' *Common Stock Indexes* for the period 1871-1937, which has been grafted into the *Standard Statistics General Index* that began about 1918.

The period covered includes 87 single years; 83 periods of 5 consecutive years; 78 periods of 10 consecutive years; 68 periods of 20 consecutive years; and 58 periods of 30 consecutive years. There were only 4 periods of 20 consecutive years of the 68 in which the index ended lower than it began. These periods ended in 1893, 1894, 1932, and 1933.

### ... Gains and Losses, 1871-1957

Length of Period (years)	Number of Periods	Periods of Gain in Value	Periods of Loss in Value	Periods of No Change	Chance of Gain in Value (per cent)
1	87	50	36	1	57
5	83	56	27	0	67
10	78	65	13	0	83
20	68	64	4	0	94
30	58	58	0	0	100

SOURCE: Alfred Cowles & Associates' COMMON STOCK INDEXES and the STANDARD STATISTICS GENERAL INDEX. Each stock price has received a weight equal to the price per share multiplied by the number of shares outstanding.

surpluses limited to rather small proportions of assets.

For example, it might be provided that common stocks be written up or down in the course of a year by some fraction, say one-fifth, of the difference between their book or asset value at the beginning of the year or their cost if purchased during the year, and their market value at the end of the year. To be conservative, stocks that do not pay dividends might be carried at market value. Such a smoothing formula would go a long way toward ironing out substantial fluctuations in the asset values of common stocks and would be an important step in enabling life insurance companies to increase their investments in these.

A more far-reaching suggestion would involve basic technical changes in the nature of life insurance policies. Certain new types of policies might be devised that would involve guaranteed fixed dollar benefits in the event of death during a fixed but rather lengthy period of years following issuance, with the other benefits not being of a guaranteed nature but depending on the results obtained by investing a large part of the reserve in equity-type investments. This idea can best be illustrated by some practical examples.

Take a 20-year endowment policy. This can be broken down into a 20-year term policy and

a 20-year pure endowment policy. The term part could have its reserve set up in the traditional way and invested entirely or very largely in fixed dollar media so that the full face amount of the policy could be guaranteed in the event that death occurred prior to maturity. The pure endowment reserve, however, might be invested entirely or in substantial part in participating shares in the company's entire common stock portfolio or of shares in a separate equity fund.

A new type of 20-payment life plan might also be devised along somewhat similar lines. The premiums and reserves would be broken down into those applying to a 20-year term policy and to a whole life policy deferred for 20 years. Again, the term reserve would be invested in fixed dollar media to provide for the payment of the face amount of the policy if death should occur in the first 20 years. The deferred life reserve could be invested entirely or in substantial part in equities. At the end of the period, the insured might then use the current value of the reserve accumulation to purchase paid-up insurance of a fixed dollar type, if economic conditions at that time seem to make this desirable. On the other hand, he might continue on an equity reserve basis. In that case, the amount payable at death would not be a guaranteed fixed dollar amount but

TABLE 2

## Reserve Accumulations for Endowment Policy (\$1,000, 20-year) Issued at Age 30

Duration of Policy (in years)	Term Reserve (20-year) at 3½ Per Cent	Invested in Fixed-Dollar Media at 3½ Per Cent	Pure Endowment Reserve Accumulations		
			Invested in Common Stock Averages		
			1915-35	1929-49	1936-56
5	11	176	188	142	146
10	19	390	607	386	585
15	17	657	1,472	767	1,289
20	0	1,000	1,154	1,433	3,557

SOURCE: Figures for 1915-35 from DOW-JONES INDUSTRIAL AVERAGES; figures for 1929-49 and 1936-56 from MOODY'S 200 COMMON STOCK AVERAGES.

would depend upon the subsequent behavior of the equity fund.

There seems to be no good reason why the same line of thought could not be carried into ordinary life policies. Part of the premium would be used for the first 20 years to purchase a fixed dollar 20-year term policy. The remainder would be invested in equity shares to go toward the building up of a deferred life reserve at the end of the period, to which the premiums collected after 20 years would continue to contribute. The amount payable after this time would be variable, depending upon the dollar value of the equity shares in the reserve.

The reason for selecting 20 years as the initial term in all of these cases is twofold: (1) it is as long a time as most people can foresee with any degree of accuracy their need for fixed dollar life insurance protection, and (2) experience has shown that, except in the most unusual circumstances, a reserve intelligently invested in equities over such a long period will tend to represent a larger dollar accumulation at the end of the period than a fixed dollar reserve at the rates of interest usually assumed. For shorter periods, one cannot feel at all confident of this.

The possible results of this suggested approach may be illustrated by some experimental calculations. These relate directly to a 20-year endowment policy issued at age 30. The results of these calculations have been summarized in Table 2. They are based upon the fact that a 20-year endowment policy may be broken down into a term policy that pays

benefits only if the insured dies within the 20 years, and an endowment policy that pays only in the event the insured lives until the end of the 20 years.

The 20-year term reserve was assumed to be invested in fixed dollar media that earned 3½ per cent interest. The pure endowment reserve was assumed to be invested on two alternative bases: (1) in fixed dollar media at 3½ per cent, and (2) in certain well-known stock averages with interest accumulated at a rate, in order to be conservative, set at ½ per cent less than actually earned on these averages in the form of cash dividends. The reserves are all calculated on the net level basis. The total reserve accrued on the policy at any one time, of course, will be the sum of the 20-year term reserve and the pure endowment reserve.

In the case of investment in the stock averages, three experimental periods were chosen: 1915-35, 1929-49, and 1936-56. These periods obviously differ widely in their characteristics, and the results also differ widely.

Results of these calculations seem worthy of note.

- 1 The reserve relating to the 20-year term part of the policy is at all times quite small in relation to the pure endowment reserve.
- 2 In all three experimental calculations based on stock investments, the amount payable at maturity was greater than the \$1,000 face amount of the policy that would have been payable if the reserve had been invested in fixed dollar media.
- 3 When the pure endowment reserve was invested in stock averages, there were certain

intermediate periods when this reserve accumulation would have been less than the fixed dollar reserve.

- 4 It would have been possible to choose 20-year periods over which the stock accumulation would have been less than the fixed dollar accumulation, but these would have had to end in the depression years 1932-34.

#### SOME PITFALLS

It is not my intention to infer that common stock investment by life insurance companies is likely to be an easy street leading always in the right direction. The process is likely to be beset by a group of problems, trials, and doubts far exceeding in intensity and continuity those encountered in the making of fixed dollar investments. The intelligent handling of common stocks and other types of equities probably requires a higher and somewhat different type of investment skill than that required in the purchase of fixed dollar media. It is no field in which the perennial optimist or promoter should try to operate.

Such required investment skill is not likely to be built up overnight, and an institution embarking in this field should be content to crawl before it walks, and walk before it runs. One shudders to think of the possible results if small, newly promoted life insurance companies, unequipped with adequate investment staffs, enter this field in a substantial way.

A valuable attribute to a common stock program is continuity. The rate of buying may be maintained at a constant level over extended periods or it may be made to fluctuate, depending on relative conditions in the stock, bond, and other financial markets. If the program is halted altogether, however, it may be difficult to get it started again, and it would probably be difficult to maintain the attention of the investment staff in stocks after action ceases altogether.

The chief technical problem in connection with common stock investing is that stocks go down in price as well as up. There were four occasions between 1900 and the onset of the depression in 1929 when industrial common stocks, as measured by the Dow-Jones average, lost nearly half of their value in the course of a single decline. The 1929-32 period was, of course, unique, and the active expectation of the recurrence of such a period would put a damper on any common stock program. Later, there were two occasions between 1933 and World War II when stocks again lost half of their value in the course of a decline. Since World War II, the declines have not been as great, probably as a result of the buoyant effect of inflation on stock prices and the freedom from major recessions in this period. An encouraging feature is that stocks as a whole have come back in price after each decline and have then proceeded to reach new high levels.

It is evident from this market performance of common stocks that the size of a life insurance company's surplus, investment contingency reserves, and mandatory security valuation reserves will be a limiting factor on its common stock investments so long as its liabilities must be rigidly valued in dollars. A company under these circumstances should probably so conduct its affairs as to be able to look with some indifference on a 25 per cent decline in the market value of its common stock holdings. It should even be able to bear up under a 50 per cent decline, possibly with some discomfort, but hopeful that the discomfort will not be too long-lived. If it cannot do this, it should probably stay out of this field.

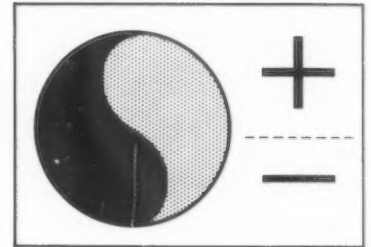
In the event that the technicalities of the life insurance business were so altered as to permit some liabilities to be expressed in equity shares having fluctuating dollar values, much of the restriction arising from present bookkeeping methods would be removed from common stock investment.



Are Profits

and Social Responsibilities Compatible?

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*School of Business, Indiana University*  
*Bloomington, Indiana*

Businessmen in this country have lost political influence because they have been apathetic and too engrossed in their own affairs to understand and appreciate the changing political world around them.<sup>1</sup>

They [businessmen] have been too busy to contemplate and adjust to the changes taking place in our social and economic environment.<sup>2</sup>

FROM ANCIENT times, the commercial interests in all societies have been periodically subjected to various types of criticism.<sup>3</sup> There are several basic reasons, however, why the current critical outbreak may merit special attention.

*First*, the central theme of the current comments appears to involve a call for a reorientation or basic change in the philosophy or objectives of private enterprise. This is noteworthy, not for its originality, but simply because it points up the magnitude of the issues. *Second*, the charges are fairly specific. They appear to be addressed mainly to "big" business, that is, the business leadership of the several hundred very large corporations that account for the bulk of economic activity in the American economy. *Third*, and this is perhaps the only relatively unique circumstance, many business leaders are currently among the vanguard of the critics.

These circumstances, plus a rapidly changing technology and unsettled world conditions, have contributed to an atmosphere of pending metamorphosis that has generated a large quantity of provocative literature. Two leading examples of such literature are *The Organization Man* by William H. Whyte, Jr. and *The Affluent Society* by John K. Galbraith. In

<sup>1</sup>Cecil H. Underwood, Governor, West Virginia, as quoted in the *Louisville Courier-Journal*, February 15, 1959, p. 1.

<sup>2</sup>Howard C. Pyle, President, Monterey Oil Company, in *Petroleum Week* (pub. by McGraw-Hill Book Co.; March 6, 1959), p. 6.

<sup>3</sup>In 1524, Martin Luther stated: ". . . I have wished to give a bit of warning and instruction to everyone about this great nasty widespread business of merchandising." "On Trading and Usury," in K. W. Kapp and L. L. Kapp (eds.), *Readings in Economics* (New York: Barnes & Noble, Inc., 1949), p. 25.

any event, the editors of *Business Horizons* decided that circumstances justified arranging a consultation with some of our outstanding business leaders on the topic "Are Business Objectives Changing?" To help prepare the ground for this admittedly nebulous subject, three outstanding businessmen were sent excerpts from various speeches, articles, and books. These gentlemen and others associated with their firms have given generously of their time to make this consultation possible.

Although the discussions were largely informal and ranged over a wide area, two principal questions were given the main consideration. These questions were:

- 1 *Are the critics of business correct when they charge that business decisions are oriented too strongly toward profit considerations?*
- 2 *Should our business leadership give more consideration to the external social ramifications of their decisions, and, if so, how can they accomplish this?*

Mr. Johnson began the discussion:

Johnson

ARE PROFITS  
GIVEN TOO MUCH  
CONSIDERATION?

"First, it is obvious that a generalized criticism of this type can neither be proved nor disproved. Numerous instances can be given where private enterprises, including our own firm, have sacrificed short-run profitability to long-run considerations. To the degree, however, that this question implies that high profits are somehow the equivalent of low ethics, I would disagree. The factors that determine relative profitability among industries and even among given firms within industries are too diverse. Even if we ignore all responsibilities to stockholders, is it unethical, in a social sense, for a firm constantly to strive for lower costs, wider margins, growth, and greater and more efficient use of resources? To put it another way, are firms that put some arbitrary ceiling on their profits really discharging their social responsibilities in a way that competitive market conditions require?

"In general, it is my belief that a free society rewards socially desirable institutions by permitting them to survive and grow. The fact that many of our larger private enterprises have enjoyed unprecedented growth during the past decade is at least some evidence that their results and objectives usually have been oriented in a 'right' direction.

"One of the principal criticisms that is valid with regard to businessmen and the profit motive, however, is that too many businessmen do not understand the relationship of franchise-building to long-run profits. By franchise-building, I mean creating and maintaining a favorable industry and public attitude toward your firm and your product."



Dr. Nolen was willing to admit that there was at least some validity in the charges of the critics of business.

"The basic charge concerning overemphasis on the profit motive has a strong element of truth. There are, however, other factors to be considered, such as the objectives of the profit motive. What are the ends that profit-making, as means, seeks to attain? Plainly, one of these objectives is stockholder satisfaction; another is leadership in a field of activity. Neither of these can be maintained today by careless disregard of social responsibilities. Some businessmen have not realized that the ultimate survival of private economic institutions must rest in the ability of such institutions to demonstrate clearly that they render society a greater service than could any alternative institutional framework.

"History shows that there are no 'absolute' rights that society cannot choose to disregard. In this context, profits must be viewed as affording the essential means by which the service obligation of business can be discharged.

"Although a little 'horn-tooting' does no harm, the responsibilities of business to the public cannot be limited simply to selling the idea of private enterprise. In this area, as in all others, actions will ultimately speak louder than words."

Mr. Smiddy, a consistent contributor to management literature, spoke from his experience with the General Electric Company:

"The philosophy of General Electric Company relative to managers has been published.<sup>4</sup> A part of that philosophy is embodied in our definition of 'managing,' which includes this statement about the objective of managerial work:

' . . . namely to achieve successfully, economically, profitably and on time, challenging and difficult-to-attain objectives of the component and the enterprise as a whole.

'In the balanced interests of customers, shareowners, employees, suppliers, and the Public, including the Public's Representatives, the Government.'<sup>5</sup>

"We recognize the need for practicality, but we have refused to accept Disraeli's maxim that 'a practical man is one who continues to practice the mistakes of his predecessors.' Business objectives or motives, as I see them, are much too complex to be subsumed under any particular heading.

"This statement is reinforced by the fact that General Electric and many other large companies have a positive policy toward

Nolen

Smiddy

<sup>4</sup>Harold F. Smiddy, *General Electric's Philosophy and Approach for Manager Development* (New York: American Management Association, 1955).

<sup>5</sup>*General Electric's Philosophy and Approach for Manager Development*, pp. 5-6.

decentralization of authority. The motives and objectives of General Electric as an entity reflect the diverse motives and objectives of these decentralized sources of authority.

"The late Dr. Harry A. Hopf stated that the manager must succeed 'not through authority of position but through authority of knowledge.' In our efforts to achieve a truly noncoercive society, we must accept this statement as a part of our philosophy.

"The complexities that business has had to face during the past hundred years have steadily decreased the possibility and increased the risk of managing 'by ear' or by any simplified formula such as maximization—rather than optimization—of profits. In today's interlocked and specialized economy, such action represents a luxury of irresponsibility that is neither economically sensible nor socially permissible."

Dr. Nolen began the discussion of the second question by stating that the problem is not a simple one, and that there are many factors to be considered.

*Nolen*

"My answer is that management should, within reasonable bounds, try to give more consideration to the external ramifications of their decisions. I say 'try' because there are many practical limitations on any such course of action. The managements of most of the large enterprises under discussion are only hired help. Stockholder relations must be considered—particularly where business policies are based on out-of-the-ordinary or hard-to-explain considerations.

"It is true that the law now allows management to have a wider area of discretion where the allocation of corporation money to charitable or educational causes is concerned. There are many areas, however, where the laws relating to management discretion are either restrictive or exceedingly vague.

"Furthermore, even where the law is clear, no management wishes to invite the notoriety and expense of possible proxy battles that controversial policies might engender. Every executive knows that, regardless of the ultimate outcome, internal battles of this type can cause severe economic losses to all concerned.

"Management must also consider the competitive results of any policy. If, even in the short run, a given socially desirable policy costs more money, the firm may suffer a serious competitive disadvantage. Small businessmen are in a position to complain to governments when their competitors engage in substandard or unethical acts. The larger enterprises are for various reasons less willing to invite government intervention.

"I think perhaps the biggest limitation lies in the fact that many of the external social problems to which management should give its consideration are in reality beyond the scope of one firm or, in some cases, even one industry. Unless it is assumed that government will continue to step into these problem areas, it would seem that stronger intraindustry and interindustry cooperation would

HOW MUCH HEED  
SHOULD BE PAID  
TO SOCIAL  
ASPECTS?

be needed. The antitrust laws, of course, present formidable problems where cooperation of this type is concerned.

"In summary, I think management can and should push in this direction, but changes of this type require time. Broadening of share ownership and improved economic education will perhaps in time encourage a better balance between profit motives and social responsibilities in executive decision-making. I visualize a more limited area for management decision-making in the future, but not all of the restraints will be governmentally imposed."

Mr. Smiddy also felt that the problem was deeper than the question implied. He continued with a discussion of General Electric's efforts to educate its executives in problems of social responsibility.

"It has been said that a man who questions the usefulness of theory is usually following someone else's theory. A question of this type calls for a basic philosophical frame of reference. Any philosophy that regards the social matrix as only a homogeneous bundle or mixture of resultant modified rights, without giving recognition to and distinguishing the basic rights of the individual persons from their voluntary concessions in the interest of teamwork, is founded on an unsound base.

"All social organizations should have some firm anchors. Certain fundamental rights of each individual as a person, including the right to own, and to buy and sell property, should be given a different order of priority in relation to some of the other rights in the social matrix. Furthermore, if any rights are to have permanency, they must themselves largely flow from initial voluntary agreement of the individuals concerned.

"If fundamental principles on this order were firmly established, it is my belief that many of the 'external ramifications' problems would be diminished in both number and intensity. Free enterprise requires a firm institutional framework as a base for its dynamic growth.

"The four forces of multiplying technology, competition, big government, and of individual and public opinion, however, bring new aspects and complexities to managers at an ever-accelerating rate. The interlocked social and economic impact of modern technological discoveries means that management cannot disregard problems simply because they appear to be beyond the edge of the firm.

"General Electric has developed a manager education plan involving four features. First, individual reading and study plans are worked out for each manager and potential manager. Second, local professional business management courses are offered. The topics covered include (1) what customers, owners, and suppliers expect of the company, and (2) the responsibility of the business enterprise in American society. Third, outside management courses are made available, not only through other functional divisions of the

*Smiddy*



company, but also through various colleges and universities. Managers are also encouraged to participate in civic affairs and civic organizations. Fourth, the advanced management course is offered at the General Electric Management Research and Development Institute located at Crotonville near Ossining, some 35 miles north of New York City.

"General Electric managers are freed from all other responsibilities and given a nine-week program stressing forward thinking and the evolving role of managers in our changing economy. A well-trained resident faculty, including two economists, a lawyer, a sociologist, and an engineer, carries on both teaching and fundamental research. Visiting professors and other lecturers supplement the work of the faculty.

"The several hundred graduates of the advanced program have become active teachers and multipliers of understanding of the relationships of business to domestic and world society to their normal work, both through their management work and through participation in local courses.

"Leadership needs to be founded on knowledge. General Electric Company is making every effort to strengthen the soundness of the basis for the position of leadership it hopes to maintain.

"Businessmen increasingly seem to be forced into a more active role in the political world to cope with the broadening political role being played by organized labor. I would like to see as much separation between the economic area and the political as is possible; but events may leave less practical choice than is desirable. Although there are arguments on the other side, I am convinced that large-scale enterprises are essential, not only because they can meet the needs of modern technology, but also because they are best able to cope with the long-run social considerations we have been discussing, and to do so competitively and in the public interest. Given time and patience, there are no insoluble problems here.

"Have idealistic economic critics really faced up to the hard facts of reality about what motivates people and energizes an economic structure; the operational impacts and consequences of their theories; and the built-in limitations in the social environment? History affords many examples where well-meaning utopian schemes have been thwarted by these factors with results that were both unpredictable and undesirable.

"On balance, it would seem that, while critics in recent years have pointed out possible defects in our economic system in an impressive quantity of literature, people in business have been making substantial progress. They have been acquiring more maturity in social awareness. This is especially so in the larger and more highly organized enterprises, as well as in no few of the smaller proprietorship kind of firms. Businessmen also have begun to contribute materially through literature dealing with controversial subjects and explaining their 'value system' and why they believe in it. The McKinsey Lectures published by Columbia University are good examples of this."

Mr. Johnson felt that the public seldom realizes the extent to which external ramifications are considered in business decision-making. But he recognized the need for further study of this problem, particularly to establish universally acceptable standards and objectives for business action.

"I would like to point out that most business decisions are subjected to fairly rigorous long-run tests as to their external ramifications. Customers, employees, and stockholders typically have a wide choice of various actions by which they can reward or penalize business leadership for making decisions they do not like.

*Johnson*

"Business critics who plead for greater government intervention overlook the fact that the alternative choices available to the general public in the areas of economic activity are usually broader, more diverse, and hence more 'democratic' than are the choices left to the public as voters in the political area.

"This is not to argue that businessmen should not constantly try to expand their knowledge of the external ramifications of their decisions. The key question is: Can appropriate guides and standards be found for this purpose?

"At the present time, the best reason I can offer as to why I feel that businessmen should give more consideration to the external factors involved in their decisions is simply because I believe that it is good business to do so. Until and unless we can arrive at some clear-cut understanding as to the proper roles for business, labor, and government in the economy, with all of the interrelated rights and responsibilities clarified, it will be impossible to define 'external' standards and objectives in any meaningful way.

"I feel that it is basically up to the colleges and universities to train the new generation of managers for a changing and perhaps more responsible role in economic life. Someone must also come up with some better answers to some of these perplexing issues we have been discussing."

What are the views of some of the academicians who have written in this area? Professor Milton Friedman, an ardent advocate of rigorously competitive free enterprise presented one view when he stated:

"In the American tradition the 'free' in free enterprise does not mean that established enterprises shall be 'free' to do whatever they want including keeping out competitors by cartels, price-fixing arrangements and the like . . . The businessman who favors a tariff on his product; the oil company that supports the Texas Railroad Commission or the Federal administration's attempts to restrict oil imports; the homebuilder who regards F.H.A. insurance of mortgages as in the 'public interest'; the businessman who presses for the provision of loans at specially favorable terms by the Small Business Administration; the manufacturer who wants Congress to legalize resale price maintenance; the broadcasting

IN

CONCLUSION

executive who seeks to have the Federal Communications Commission forbid pay-as-you-see TV—each of these is undermining a free private enterprise society whatever his protestations.”<sup>6</sup>

On the other hand, Professor David McCord Wright has stated:

“Of course this economic election and the transfers which it induces do not always work smoothly. Monopolistic groups of workers or businessmen may arrest the process of adaptation. People may make mistakes. Changes may not offset each other smoothly or may lag, and there may be a consequent depression. Nevertheless, despite its obvious shortcomings, the system has managed to make a splendid record in production, and it has yet to be shown that the job could be done better over the long pull by alternative systems . . .”<sup>7</sup>

Hewitt

In spite of the fact that most contemporary economists would probably accept a somewhat less rigorous competitive standard than would Professor Friedman, the economic history of this country seems to indicate that the real choice facing business is not controls versus absence of controls; but *effective* competitive market controls on the one hand versus *effective* controls of some other type (for example, political, countervailing, or self-discipline) on the other.

Furthermore, it is not at all certain that a self-discipline choice is really open. Some writers have expressed concern over what may be called the “baronial” or *noblesse oblige* aspects of the various “trusteeship” concepts.<sup>8</sup> In addition, some business leaders question the ability of enough firms to exercise effective self-discipline. Sydney Weinberg, a director in several large corporations, stated:

“The people have the power, at the market-place and at the voting booth, to bring any company to its knees. This sobering fact is well appreciated in the managements of most large corporations today. But the danger here is that any irresponsibility in a few high places will bring the roof down on all companies large and small, even though most of them show a sense of integrity and public responsibility.”<sup>9</sup>

It is noteworthy that some large firms now not only have a considerable number of outside directors who were deliber-

<sup>6</sup>*Problems of United States Development* (New York: Committee for Economic Development, 1958), p. 256.

<sup>7</sup>David McCord Wright, *Key to Economics* (New York: The Macmillan Co., 1954), pp. 29-30.

<sup>8</sup>See Edwin G. Nourse, *The 1950's Come First* (New York: Henry Holt & Co., Inc., 1951), pp. 73-74.

<sup>9</sup>“Challenge to Private Enterprise,” *Commercial and Financial Chronicle*, December 5, 1957.



ately chosen for their breadth of social and business understanding, but that some of these boards of directors include active presidents or deans of institutions of higher education. Although a few academicians like Professor Friedman and perhaps Professor John K. Galbraith espouse what they believe to be "correct" public policy, most businessmen and economists confess to a considerable amount of uncertainty in this area.<sup>10</sup>

In 1945, Professor R. A. Gordon wrote:

"Hence, though the decade has increased the emphasis on the broader social criteria of business leadership, and though our business leaders have gradually accepted some responsibility for the protection of the interests of labor, consumers, and the community at large, it still remains true that a unified and self-consistent set of objectives for the large corporation has not been clearly formulated."<sup>11</sup>

If it is assumed that increasing recognition of social responsibility on the part of businessmen is per se desirable, then several developments in this direction should be noted. Some firms, including General Electric Company, have made some substantial commitments to pure research, not only in the physical sciences area, but also in the social sciences area. All of the executives consulted were able to list specific steps taken to widen not only their own perspectives but also those of their respective management groups. (Wider perspectives, of course, do not necessarily mean that business should or will be changed.)

Businessmen are not only speaking out on these issues, but there is every sign that they are giving an increasing amount of attention to what some of their critics are saying. Perhaps they have learned the lesson in the social area that Charles F. Kettering learned in the technological area.

"Whenever you look at a piece of work and you think the fellow was crazy, then you want to pay some attention to that. One of you is likely to be, and you had better find out which one it is. It makes an awful lot of difference."<sup>12</sup>

By the same token, if some of the critics of business would take a closer look at current managerial policies and practices in big business, some of the irresponsible criticism might be

<sup>10</sup>For a review of many of the problems, see George W. Stockings, "Institutional Factors in Economic Thinking," *American Economic Review* (March, 1959), p. 1.

<sup>11</sup>*Business Leadership in the Local Corporation* (Washington: The Brookings Institution, 1945), p. 342.

<sup>12</sup>Quoted in *Forbes* (March 15, 1959), p. 66.

eliminated. There is no reason to believe that there are utopian solutions to these problems, or that all the "social adjusting" will be in one direction. The chances are that some considerable areas of conflicting interests are a necessary condition for both freedom and progress.

In his 1953 book entitled *Social Responsibilities of the Businessman*, Professor Howard R. Bowen gives an excellent and extended analysis of the issues under discussion.<sup>13</sup> In Chapter 6, dealing with the businessman's view of this social responsibility, Professor Bowen reached the following basic conclusions:

- 1 Businessmen have a widespread and sincere interest in the subject.
- 2 Businessmen are more articulate concerning their general responsibilities (service motive or trusteeship concepts) than they are concerning specific duties which flow from these general responsibilities.
- 3 Businessmen feel that both business and the public must undergo some adjustment of attitudes.
- 4 Businessmen are extremely sensitive to public opinion.
- 5 Businessmen noticeably give more attention to those obligations that are clearly in their long-run interest than to those not so clearly advantageous to them.<sup>14</sup>

The experience gained in this consultation leads the editor to believe that Professor Bowen's conclusions are essentially correct.

Oliver Wendell Holmes once said, "The great thing in this world is not where we are, but in what direction we are moving." Let us, therefore, close on an optimistic note by quoting from Dean Rockwell Hunt:

"Strictly speaking, the 'economic man'—in Frank Knight's phrase, 'the selfish, ruthless object of our moral condemnation'—virtually does not exist today. It follows that the transition demanded by an economy of plenty need not be as drastic as may appear on the surface."<sup>15</sup>

<sup>13</sup>Howard R. Bowen, *Social Responsibilities of the Businessman* (New York: Harper & Brothers, 1953). The study was authorized by the Federal Council of Churches in 1949.

<sup>14</sup>*Social Responsibilities of the Businessman*, pp. 67-68.

<sup>15</sup>*Problems of United States Development*, p. 298.

*The editor of this Consultation would like to express his gratitude to the participants, to the executives of the firms represented, and to Professor John F. Mee of the Indiana University School of Business for his assistance.*

## The Argument *for* Selective Credit Ease

WITHIN recent years, monetary or credit policy has been the principal weapon used in the United States to deal with persistent inflationary pressures. Moreover, in spite of the various types of criticism of it, monetary policy is not likely to be displaced either by fiscal policy or by direct controls over prices and wages. The advantages of monetary policy as a method of restraining inflationary pressures are both great and widely appreciated, and there is a continuing hope that means will be found to minimize its disadvantages.

Unfortunately, however, few if any significant proposals to improve monetary policy have been offered by the monetary authorities themselves. Indeed, as Henry C. Wallich has observed, "Today, monetary policy makes a point of being classical—of using no major device that was not well-known 20 or more years

ago."<sup>1</sup> If this situation is to be remedied, the deficiencies of current monetary policy as a tool for coping with inflationary pressures must be examined and analyzed. Techniques specifically designed to eliminate these deficiencies can then be developed.

### TYPES OF POLICY

Monetary or credit policy may be subdivided into general and selective policy. General credit policy includes all measures designed to affect the over-all level of money or credit outstanding at any time. Open market operations, reserve requirements, and the discount mechanism, when they are employed to influence the level of member bank reserves and interest rates fall into this category.

<sup>1</sup> See his paper, "Postwar United States Monetary Policy Appraised," *United States Monetary Policy* (New York: The American Assembly, Columbia University, December, 1958), p. 108.



Selective credit policy, on the other hand, includes measures for influencing the use to which credit is put. For example, Regulation W governing consumer credit, and Regulation X governing credit for new residential construction, were both designed and administered to influence the demand for credit rather than the total credit supply. Thus, they would fall in the second subdivision. Use of these regulations, however, has been limited to wartime and critical peacetime emergencies; with the passing of these emergencies they have been abandoned. In more normal times, it has generally been felt that they would serve no useful economic purpose and would interfere with market forces. In less critical situations, general credit policy has been relied on almost exclusively to restrain inflationary pressures. (Regulations T and U, however, which govern security purchases on the organized exchanges, are in continuous use for the purpose of limiting speculation.)

Although few economists would dispute the propriety of a policy of general credit restraint to cope with persistent inflationary developments, two weaknesses of this policy have been noted in recent years. One is its restrictive influence on the rate of economic growth. The other is its markedly uneven effects on different prospective borrowers.

#### OUR IDLE RESOURCES

Even in a period when inflationary pressures are strong, some economic resources and some manpower are generally idle or underemployed. A policy of general credit restraint tends to perpetuate such idleness and underemployment, and may even increase it. The idle manpower and resources may not be as efficient as manpower and resources already in use, and thus their utilization may not be as desirable from an economic point of view. Nevertheless, if the less efficient manpower and resources are utilized for productive purposes, physical output will rise to higher levels, provided there is no decrease in the extent or efficiency of utilization of manpower and resources already contributing to our total out-

put. Thus, if economic growth is defined as an increase in physical output of goods and services after allowing for depreciation and obsolescence of capital, it is clear that a policy of general credit restraint tends to restrict the rate of economic growth.

The recent past provides an interesting example. On August 2, 1955, the Federal Open Market Committee instituted a policy of general credit restraint that was continued without interruption throughout 1956.<sup>2</sup> During 1956, however, inflationary pressures not only persisted but even grew stronger. From January, 1956 to December, 1956, the Bureau of Labor Statistics wholesale price index rose from 111.9 to 116.3, and the consumer price index rose from 114.3 to 118.0. Any relaxation of the policy of general credit restraint during this period would undoubtedly have accelerated the inflationary forces already at work and would have resulted in still higher prices.

Despite the general inflationary situation, however, unemployment continued to be a serious problem in some localities. In January, 1956, according to the U. S. Bureau of Employment Security, there were substantial labor surpluses in 19 of the 149 major labor market areas in the United States. Of these 19 major labor market areas, 16 continued to have a substantial labor surplus throughout the year. The number of major labor market areas with a substantial labor surplus reached a peak of 24 in September, 1956. A substantial labor surplus was also reported for 64 smaller labor market

<sup>2</sup> The directive of the Federal Open Market Committee to the Federal Reserve Bank of New York dated August 2, 1955 provided that transactions for the System's open market account be conducted with a view "to restraining inflationary developments in the interest of economic growth." *Forty-second Annual Report of the Board of Governors of the Federal Reserve System*, covering operations for the year 1955 (Washington: U.S. Gov't Printing Office, 1956), p. 101.

From January 24, 1956 to March 27, 1956 and again from May 23, 1956 to August 7, 1956, this directive was qualified by a phrase directing the bank to take "into account any deflationary tendencies in the economy." (See the *Forty-third Annual Report of the Board of Governors of the Federal Reserve System*, covering operations for the year 1956.) There is no evidence, however, that transactions or credit conditions were modified significantly as a result of this qualification.

areas in January, 1956. Of these, 52 continued to have a substantial labor surplus throughout the year; a high of 65 smaller labor market areas with a substantial labor surplus was reported in March and again in May, 1956.<sup>3</sup>

It is probable that little, if any, of this unemployment was directly caused by the policy of general credit restraint. During 1956, a large part of our unemployment problem was the result of long- and short-term developments of a nonmonetary character—as in the case of communities largely dependent on such declining industries as coal or textiles for their economic well-being.

In many cases, however, credit stringency was a contributing factor. This was true even in areas characterized by declining industries. It is likely that credit stringency prevented other industries in these areas that were capable of expanding output from doing so. Credit stringency also hampered the efforts of some communities to finance the construction of industrial facilities or to undertake other projects that might have attracted new firms.<sup>4</sup>

The importance of additional credit for these communities was recognized in the Depressed Areas Bill drafted by Senator Douglas in 1955, and later in President Eisenhower's proposal for the establishment of an Area Assistance Administration.<sup>5</sup> But neither of these measures, which would have provided for the extension of capital improvement loans to areas seriously affected by unemployment, was ever enacted.

#### EFFECTS OF STRINGENCY

With respect to the uneven effects of the postwar policy of general credit restraint, it

has been pointed out that while some borrowers—chief among them, well-established business firms—were at all times able to secure funds with relative ease, funds for some important, socially desirable purposes became exceedingly difficult to obtain. During 1956, credit stringency hampered the financing of new homes, new businesses, and small businesses, as well as public schools, roads, and hospitals. In many communities, the difficulty of securing adequate funds led to the abandonment, at least temporarily, of very worthwhile projects.

Concern over this problem has attracted the attention of many public-spirited citizens, including reputable economists. Thus, late in 1956, Sumner H. Slichter, while conceding the necessity of a policy of general credit restraint to cope with persistent inflationary pressures, referred to the uneven effects of this policy as “the most fundamental question raised by a long continuation of a policy of credit restraint.” “The market channels the funds into the most profitable uses,” he wrote. “The most profitable uses tend to be the most productive uses from the private point of view. But there are some important social interests which fail to receive consideration when funds are rationed on the basis of what the market will pay for them.”<sup>6</sup>

Difficulty in securing funds in a period of credit stringency, however, is not always a result of inability to pay the market price. It is true that in some cases legislation limiting maximum interest rates they may pay has prevented state or local governments from securing funds. In such cases, the first remedy to be advocated is repeal or modification of the hampering legislation. In other cases, however, borrowers have had difficulty in securing funds despite their willingness and ability to pay the market rate.

The reasons are not hard to find. In a period of credit stringency, well-established business

<sup>3</sup> *The Labor Market and Employment Security* (pub. by the U.S. Department of Labor; February, 1956 through February, 1957). A labor market area is classified as having a substantial labor surplus when 6 per cent or more of its labor force is unemployed. Labor market area classifications are published by the Bureau of Labor Statistics bimonthly.

<sup>4</sup> A similar point is made by the National Planning Association. See William H. Miernyk, *Depressed Industrial Areas—A National Problem* (Planning Pamphlet No. 98; Washington: National Planning Association, January, 1957), p. 14.

<sup>5</sup> *Economic Report of the President* (Washington: U.S. Gov't Printing Office, January, 1956), p. 62; and *Economic Report of the President* (January, 1957), pp. 63 ff.

<sup>6</sup> See his letter to the editor, *The New York Times*, December 30, 1956, Section 4, p. 6E.

firms are likely to be in a favored position to obtain new funds from lending and investing institutions, not merely because these firms are able to afford the relatively high cost of those funds, but also because the cost of doing business with such firms is lower, their credit standing is generally high, and they are likely to be steady clients of the lending institutions. Moreover, as William McChesney Martin himself has noted, small business firms frequently have access to but a single source of credit. If credit is denied them by that source, they have no place to turn. Large concerns, on the other hand, generally have several possible sources. Even if one or more of these sources should refuse credit, the large firm is frequently able to obtain the desired funds elsewhere.<sup>7</sup>

#### RESULTS OF RESTRAINT

A fundamental issue of public policy is involved here. Should we, in every period characterized by inflationary pressures, be content with a rate of economic growth lower than that we might achieve? And should we forego the benefits that would result from expenditures for certain important, socially desirable purposes, simply because a policy of general credit restraint prevents some prospective bor-

rowers from securing funds for these purposes? Or can a method (or methods) be found that will enable these borrowers (and certain others as well) to obtain funds more easily without sacrificing the benefits of general credit restraint?

Funds for various socially desirable purposes, as well as for aiding depressed areas and thereby contributing to our economic growth, *can* be increased without jeopardizing the effectiveness of general credit restraint. These ends might be achieved by the use of selective credit policy as a supplement to a policy of general credit restraint whenever inflationary tendencies persist.

#### SELECTIVE CREDIT EASE

The concept of selective credit policy as a supplement to general credit policy is not new. Up to the present, however, practical application of this concept has been limited largely to the use of instruments of selective credit *restraint*. Thus, as indicated earlier, the Board of Governors of the Federal Reserve System has, in accordance with the provisions of special legislation, at various times administered Regulation W governing consumer purchases and Regulation X governing new residential construction. With altered circumstances, these regulations have been modified or suspended.

No application of the concept of selective credit restraint, however, will eliminate or mitigate the undesirable side effects of a policy of general credit restraint. Additional selective restraint could neither facilitate the rate of economic growth nor even out the effects of general credit restraint on various groups of prospective borrowers. If we are to adapt selective credit policy to these purposes, we must develop the concept of selective credit *ease* and apply it in periods characterized by strong inflationary pressures. In other words, in any period of strong and continuing inflationary pressures, the policy of general credit restraint should be supplemented by a policy of selective credit ease. Suitable instruments of selective credit ease, intelligently administered by

<sup>7</sup> See the statement by William McChesney Martin, Chairman, Board of Governors, Federal Reserve System, before the Joint Economic Committee of Congress, February 5, 1957, *Federal Reserve Bulletin* (February, 1957), p. 145; and the survey, "Member Bank Lending to Small Business, 1955-57," *Federal Reserve Bulletin* (April, 1958), pp. 393-411. See also Arthur F. Burns, *Prosperity Without Inflation* (New York: Fordham University Press, 1957), p. 78.

Although the Small Business Administration, established in 1953, is authorized to make direct loans to business firms under certain conditions, it has not made full use of this power. According to the Select Committee on Small Business, from 1954 to 1957, the Small Business Administration requested only \$175 million, or less than 65 per cent of the total of \$275 million of un earmarked funds that it has been authorized to use for either business loans or disaster loans. The Committee, after investigating the loan program, concluded that the Small Business Administration had been unduly cautious and the volume of loans granted inadequate. *Final Report of the Select Committee on Small Business*, House Select Committee on Small Business, Pursuant to H. Res. 114, 84th Cong. (Washington: U.S. Gov't Printing Office, 1957), pp. 67 ff.



our monetary authorities, could reinforce, rather than weaken, the general policy of restraint, and could at the same time minimize its restrictive influence on the rate of economic growth and its uneven effects on different groups of borrowers.

Some instruments of selective credit ease have in fact been employed by our monetary authorities in the past, but they have never been used to supplement and reinforce a policy of general credit restraint. Selective credit ease has been used to assure adequate wartime credit accommodations for the Treasury. During World War II, for example, Federal Reserve banks were authorized to offer a preferential discount rate of 0.5 per cent on member bank advances secured by government obligations with a maturity not exceeding one year. By this device, member banks were encouraged to buy and hold short-term, low-yield issues rather than longer-term issues. In addition, to encourage member banks to carry war loan deposit accounts of the Treasury, these deposit accounts were exempted from reserve requirements and from assessments for deposit insurance.

Selective credit ease has also been used to supplement a policy of general credit ease. From 1932 to 1934, the worst years of the Great Depression, several amendments were added to the Federal Reserve Act allowing Federal Reserve banks to make direct discounts and advances to industrial and commercial firms unable to secure adequate credit under reasonable terms from other financial institutions. These amendments authorized loans for working capital for periods as long as five years, as well as loans and advances on short-term account. In addition, Federal Reserve banks were authorized to make loans and advances to other financial institutions that had made such loans, and even to purchase obligations from these institutions. The Federal Reserve banks could thus actually guarantee such loans for the lending institutions.

Direct Federal Reserve bank discounts and advances to private business firms served a useful purpose in the uncertain financial situation of the early 1930's, but the volume of such loans soon declined and has remained low

ever since. Since World War II, the amount of such loans has been negligible.

Experience indicates that borrowers prefer to deal with their local and customary sources of credit, rather than appeal to the Federal Reserve bank in their district. Moreover, both commercial and Federal Reserve bankers have indicated their dissatisfaction with these loans, which appear to bring their respective banks into competition with one another.

There are various other government agencies that either lend their own funds or guarantee loans made by other financial institutions to assure adequate credit accommodation at reasonable cost to preferred borrowers. In effect, these agencies are already administering programs designed to provide selective credit ease. But there is no provision for relating the policies of these agencies to general credit policy. Operating under special enabling legislation, these agencies are completely independent of the Federal Reserve System, and at times may actually pursue policies in conflict with those of the Federal Reserve System.<sup>8</sup>

The basic purpose of adoption of a policy of selective credit ease to supplement and reinforce general credit restraint would be the provision of adequate credit accommodation for certain socially desirable purposes, as well as to promote the employment of idle manpower and economic resources for productive purposes. Credit should be made available, however, only for purposes that would have non-inflationary or counterinflationary effects, or for purposes that would contribute substantially to important social objectives.

#### THE AVAILABLE TOOLS

A number of instruments would be needed to implement such a policy adequately. Some of these might be related to selective credit instruments used in the past. For example, differential Federal Reserve discount rates might be utilized, with a lower discount rate applicable

<sup>8</sup> Arthur F. Burns makes a similar point in arguing against any expansion of the activities of the Small Business Administration. *Prosperity Without Inflation*, p. 78.

to discounts and advances requested by member banks as a result of loans made in accordance with the policy of selective credit ease.

Mention has already been made of the use of a lower discount rate during World War II to stimulate purchases of government obligations by member banks.<sup>9</sup> With certain technical changes, a preferential discount rate could also be used as an instrument of selective credit ease. Member banks that have extended a certain amount or proportion of credit for purposes consistent with the policy of selective credit ease might be eligible for discounts or advances from their Federal Reserve bank at a preferential discount rate, provided that this credit also be utilized for purposes consistent with the policy of selective credit ease. In this fashion, member banks would be provided with a strong incentive to make loans and discounts for such purposes.

The preferential discount rate for each Federal Reserve bank might range somewhere between 0.5 per cent and 1 per cent below the standard rate applicable to credit extended to its member banks for other purposes. The standard Federal Reserve discount rate would, of course, apply to all credit extended to member banks not qualifying for the preferential rate.

The success of such a policy would depend to a considerable extent on the care with which the purposes consistent with the general objectives of the policy of selective credit ease were specified and differentiated from other purposes for which credit is granted. Much, if not all, of the credit granted in areas with a substantial labor surplus, as well as credit granted for certain specified socially desirable purposes, should be taken into account in de-

termining the eligibility of any member bank for the preferential discount rate.

Similar results might be achieved by establishing lower reserve requirements for member bank deposit accounts that arise from credit extended by these banks for specified purposes. The reduction in reserve requirements might be effected either by applying a certain percentage—say 80 per cent—to the general reserve requirements applicable to the different classes of member banks, or by granting a specific absolute reduction in those requirements.

Preferential discount rates and lower reserve requirements, however, are not the only tools that might be used to implement a policy of selective credit ease. Other methods, such as direct Federal Reserve bank discounts and advances to qualified borrowers, and Federal Reserve bank guarantees of loans by other financial institutions for authorized purposes, might also be employed.

Although in the past there have been some objections to direct Federal Reserve bank loans to business borrowers, many of these objections would probably be withdrawn if the conditions and terms of such loans were carefully circumscribed. Nevertheless, it appears likely that Federal Reserve bank guarantees of loans by other financial institutions would provide a more acceptable and more potent tool for effecting a policy of selective credit ease. Such guarantees would not place Federal Reserve banks in competition with other financial institutions. Credit judgment and responsibility would remain primarily with private lending institutions, which would be dealing with regular customers whose circumstances and needs were well known to them. The Federal Reserve banks would not guarantee any loan unless requested to do so by the lending institution. Each loan would be considered on its own merits. In order to deter local banks from making loans of poor quality, some portion of each loan might be exempted from the guarantee provision.

In some circumstances, one of these tools might be preferable to the others. In some cases, however, a combination of two or more might be desirable. While certain general

<sup>9</sup> Differential discount rates have also been used for certain other purposes. During part of 1920 and 1921, several Federal Reserve banks employed a progressive rate structure designed to discourage member banks from applying for loans in excess of a certain "basic line." A lower rate was applied to credit extended to each bank up to a specified total amount for that bank, and a higher rate for credit extended to any bank over and above its specified "basic line." In addition, for more than 20 years, loans and discounts to member banks involving certain classes of collateral have been subject to a discount rate 0.5 per cent higher than the general rate.

guiding principles might be determined in advance, experience in the administration of a policy of selective credit ease would be necessary before any elaborate set of rules could be formulated.

It is fairly clear, however, that use of the preferential discount rate, if unaccompanied by other restrictive measures, would involve a net expansion of bank credit. Since this is undesirable in a period when we are concerned with restraining inflationary pressures, it would probably be necessary to supplement this device by other measures designed to restrict the availability of credit for purposes other than those that would serve to qualify a member bank for the preferential discount rate.

#### WHAT ARE THE BENEFITS?

Some of the practical benefits of selective credit ease can be illustrated by the experience of a relatively small Midwestern firm producing industrial valves and related products. In 1955, this firm received several large orders for its products. Available productive capacity was adequate. Moreover, since unemployment was a rather serious local problem, the firm would have no difficulty in recruiting additional workers. To meet the necessary delivery schedules, however, the firm needed more working capital to purchase larger inventories of materials and parts.

A total increase of \$450,000 in working capital was sought: \$250,000 in the form of a line of credit for a period no longer than one year and \$200,000 as a three-year term loan. No question was raised about the credit worthiness of the firm for the amounts involved. But credit was generally tight, and other more desirable outlets for the limited resources of the local banks were available.

After prolonged negotiations, the firm did manage to borrow \$100,000, but the inadequacy of this loan made it necessary for the firm to reject some of the orders it had received and to cancel its plans for expansion. To make matters worse, these developments gave rise to a rumor that the local banks considered the

firm a poor credit risk and that it was in danger of going into bankruptcy. Although the rumor was false, employee morale suffered, and several skilled employees left the firm, believing that they would find new jobs more readily before it shut down than afterward.

With a policy of selective credit ease in effect, the firm probably would have been able to obtain the credit necessary to expand its operations and meet the delivery schedules specified in its new orders. The community as a whole, as well as the individual firm, would have benefited from the increase in employment and income. Moreover, since the firm is reasonably efficient, the increase in the value of its product would have been larger than its added costs. Its expanded output thus would not have increased existing inflationary pressures.

#### LEGISLATION IS NEEDED

A policy of selective credit ease would require enabling legislation. Such legislation, providing selective credit instruments to assure adequate credit accommodation where the effects would be either noninflationary or counterinflationary, might be made a permanent part of the Federal Reserve Act, since utilization of such controls would be justified under virtually all conditions requiring a policy of general credit restraint.

On the other hand, temporary legislation, with an expiration date perhaps a year or two after the date of enactment, would be more appropriate in the case of selective credit instruments designed to minimize the uneven effects of general credit restraint. Congress and the President would then have to reconsider at regular intervals the need for such a policy and the social value judgments on which it is based.<sup>10</sup>

Many difficult problems would undoubtedly arise in connection with the adoption of a policy of selective credit ease. Exceptional care

<sup>10</sup> The use of temporary legislation for this purpose would be in line with the precedent established in the case of selective credit controls applicable to consumer purchases and new residential construction.



would have to be exercised in drafting the basic enabling legislation and the more detailed regulations necessary to achieve the desired ends. Additional problems would beset those who administered the regulations. At every stage, courage would be required to withstand pressures of special interest groups that may wish unjustifiably to benefit from the policy. Imagination and technical skill would be needed, not only to fashion suitable instruments of selective credit ease, but also to administer them. New relationships between Federal Reserve banks and member banks would have to be developed. For example, the effective implementation of a policy of selective credit ease would probably require a closer scrutiny by the Federal Reserve banks of the lending policies and practices of member banks.

In addition, policies of selective credit ease must not result in a net addition to inflationary pressures. In some cases, this might mean that if instruments of selective credit ease were employed to facilitate the completion of certain socially desirable projects, there would be a simultaneous compensating increase in the degree of general credit restraint. In cases where instruments of selective credit ease were employed to increase utilization of our economic resources and expand total output, it would not be necessary to accompany the use of these instruments by greater restriction of general credit availability. In such cases, however, subsequent developments would have to be followed closely. If the credit thus made available, after serving its initial useful purpose, subsequently appeared to add to inflationary pressures, suitable restrictive measures could be employed.

#### ADMINISTRATIVE PROBLEMS

Administrative responsibilities connected with such a policy of selective credit ease

should be entrusted to the Federal Reserve System. Conceivably, this responsibility could be assigned to another agency or even to a group of agencies. However, the administrative problems would be fewer and less knotty, and the policy more likely to be effective and well co-ordinated with general monetary policy, if the task were performed by our Federal Reserve authorities. This would involve some reorientation on the part of various individuals connected with the Federal Reserve System as to the role of the System in our economy—but once this reorientation was accomplished, the Federal Reserve authorities would not be likely to find any of the operating problems involved insoluble.

Of course, all this assumes that our monetary authorities would be sympathetic with the purposes of selective credit ease and that the prejudice of some officials against the use of selective credit controls could be overcome. But this is not too strenuous an assumption to make. For the primary responsibility of our monetary authorities is to administer credit policies consistent with the needs of an expanding economy and the social objectives of the nation's duly constituted political authorities. Well-conceived and -administered instruments of selective credit ease could be exceedingly helpful in these respects.

Recent experience has revealed that dissatisfaction with general credit restraint tends to mount as that policy is prolonged, regardless of the need for the policy. It is important, therefore, that relatively simple but effective means, such as those proposed here, be utilized to minimize, if not eliminate, the weaknesses of general credit restraint. Only in this way will it be possible to keep that policy from being jeopardized when it is sorely needed, and to counteract the pressures for more drastic and cumbersome methods to achieve similar ends.

# Proposal for a North American Common Market

WILLIAM H. PETERSON

**N**EITHER of our countries is a 'free trader.' . . . Each of us feels a responsibility to provide some protection to particular sectors of our economy which may be in distress. . . . We have taken some actions of this sort. So has Canada."

This statement from President Eisenhower's "fence-mending" address, for which he and the late Secretary of State Dulles paid a personal visit to Ottawa last summer, is one indication that U.S.-Canadian relations are not all they should be; that perhaps both countries are not seeking economic harmony and cooperation in the simplest and most logical way possible—namely, mutual free trade.

*Mr. Peterson is Associate Professor of Economics at New York University's Graduate School of Business Administration.*

## ECONOMIC IRRITANTS

There are many other symptoms of economic irritability between the two neighbor nations.<sup>1</sup> Last fall, the Canadian press sizzled with criticism against the U.S. imposition of lead and zinc import quotas, which adversely affect a major export industry in Canada. Now, the Canadian press rankles over U.S. mandatory oil import controls, which were once voluntary and hurt still another major Canadian export. The sizzling and rankling continue, for

<sup>1</sup> See Joseph Barber, *Good Fences Make Good Neighbors—Why the United States Provokes Canadians* (Indianapolis: The Bobbs-Merrill Company, Inc., 1958); and W. E. Hamilton and W. M. Drummond, *Wheat Surpluses and Their Impact on Canada-United States Relations* (Washington, D.C. and Montreal: National Planning Association and Private Planning Association of Canada, 1959).

the good reason that American restrictions continue at the writing.

Canadian farmers, long concerned with U.S. farm surplus disposals overseas under U.S. Public Law 480, are apprehensive in view of the bumper 1958 American wheat crop, half again as large as the 1957 harvest, with some 600 million more bushels going into the already excessive U.S. stock pile. This means that, with all his storage facilities full, Mr. Benson is again seeking wheat customers abroad—Canada's customers, Canadian farmers fear.

Too, the U.S. Justice Department has filed a civil suit against General Electric, Westinghouse, and N. V. Philips' Gloeilampenfabrieken, a leading Netherlands electronics concern, to enjoin them from allegedly restraining U.S.-Canadian trade in radios and tv receivers through a Canadian patent pool. The companies, however, had been carrying out what was, in Canada, a quite legal Dominion investment and organizational policy. Many Canadians see the move as more U.S. interference in Canadian affairs.

Further, both major Canadian political parties are keyed to the same note of "U.S. domination." Opposition leader Lester B. Pearson said to a Columbia Graduate School of Business forum, "Many in Canada worry lest we have ceased to be a colony of the United Kingdom to become an economic dependency of the United States."<sup>2</sup>

Canada's Minister of Trade and Commerce, Gordon Churchill, in speeches before the Economic Club of New York in October and the Chicago Association of Commerce and Industry in November, complained of Canada's unfavorable balance of trade with the U.S. and asked American industry operating in Canada to "Canadianize," that is, "to achieve greater integration with the Canadian way of life."<sup>3</sup> Mr. Churchill suggested that (1) more Canadians be employed in managerial positions in

American subsidiaries and branches in Canada; (2) there be more opportunities for Canadians to buy equity stocks in U.S. subsidiary companies operating in Canada; and (3) there be more exports from American plants in Canada. (The U.S. government had been exercising "extra-territorial jurisdiction" over such plants, cutting off some sales to Communist countries, such as Canadian Ford selling to Red China.)

Yet all of these and other irritants could have been avoided if the United States and Canada had been practicing mutual free trade in goods and capital. But if America has been amiss in putting up trade obstacles, Canadians have also erected various roadblocks against U.S.-Canadian trade traffic.

The Dominion has recently passed an "anti-dumping" law that has the U.S. and many other governments worried. Under this law, the Canadian government can boost the duty on any import if it finds the price of the goods does not cover a "reasonable" profit. Canadian textile manufacturers, for instance, are already protesting that American and other textiles are being dumped in Canada and are subject to the dumping duty. American exporters to Canada believe the antidumping law could lead to all kinds of discrimination against American goods. Washington has registered an official objection.

Canada has authorized additional appraisers to be sent abroad to check on "fair market value" of products imported. Also, Canadian authorities are requiring greater information on foreign invoices.

The Canadian Tariff Board has recommended higher duties on iron and steel pipe and rolling mill products. The Board is investigating the case for higher duties on chemicals and textiles.

Turkeys and other fowl have been flatly embargoed by the Dominion, and tight quotas fixed for dried skim milk and cheese. Moreover, under the new Canadian tax structure announced on April 9, 1959, foreign canners and potato and apple growers will have to face steeper Canadian protective duties.

<sup>2</sup> *The New York Times*, November 23, 1958, p. 79.

<sup>3</sup> Canadian press releases, October 20 and November 12, 1958.



Almost all of these actions are primarily aimed at U.S. suppliers. All will involve higher costs to Canadian housewives and to Canadian industry.

### COUNTERING THE IRRITANTS

To be sure, these and other evidences of insular thinking in the two countries are being ameliorated to some extent by various joint agencies. Arising out of the discussion last summer, a U.S.-Canada Cabinet Committee on Joint Defense has been set up to consult regularly on the common defense of the North American continent within the NATO framework. Too, a U.S.-Canada Cabinet Committee on Trade and Economic Questions has been established to come to grips with the various economic problems affecting the two countries.

Again, to improve relations, legislator exchanges have been set in motion. Senators George Aiken and Homer Capehart and Representatives Frank Coffin and the since-defeated Brooks Hays visited Ottawa, and a Canadian contingent of legislators visited Washington in 1959. And now there is some talk that the quotas against Canadian oil may be raised or even eliminated.

Moreover, inasmuch as both countries are members of the General Agreement on Tariffs and Trade (GATT), and with last year's four-year extension of the U.S. Reciprocal Trade Program, some tariff and import quota relaxations between the two countries, and with other GATT and Reciprocal Trade countries under the "most favored nation" clause, are being worked out.

The trouble with all these approaches is that they are piecemeal and unco-ordinated.<sup>4</sup> They leave too many protectionist loopholes or, in U.S. tariff jargon, "peril points" and "escape

clauses." In short, as seen in the cumulative evidence, protectionism and distrust still flourish and, if anything, are on the rise.

### THE EASIEST ANSWER

The main problem is that Ottawa and Washington, each subject to lobbying pressures, are inadvertently working at cross-purposes and are just not using the simplest and, in the long run, the easiest approach to continental economic solidarity—mutual free trade. While receiving plenty of lip service, the philosophy and practice of free trade are not being given an adequate chance.

Why not, then, a U.S.-Canada free trade area and, perhaps ultimately, a North American Common Market? Such a proposal is certainly in keeping with the times. Although there were snags in the negotiations, the European Common Market is now a going concern; a European Free Trade Zone may come into being; a Nordic Common Market, an Arabian Common Market, and a Latin American Common Market are well along in the discussion stage. Ironically, the United States and Canada, in first and fourth place respectively among world traders, have stayed aloof from market integration for themselves but participate rather as observers in the common market negotiations of other regions. Yet the United States and Canada might well be the most logical free trade area or common market of them all.

Both countries are signatories to GATT, an agreement recognizing the desirability of increasing freedom of trade by the development through voluntary agreements of closer integration between the economies of member countries. Then, too, the 1958 Rockefeller Brothers Fund report on international economics similarly advises:

"The most natural multinational arrangements are frequently regional. In many parts of the world, geography combines with common history to provide the basis for common objectives and fruitful cooperative efforts.

<sup>4</sup> See, for example, "Canada Pins Hope on Two U.S. Talks: Looks to Meetings in Ottawa and Washington to Help in Easing Economic Conflicts," by Raymond Daniell, *The New York Times*, January 4, 1959, p. 2.

"We have had a special experience with regional arrangements, both domestically and within the Western Hemisphere. Domestically, we have benefited from the stimulus of a large trading area.

"The United States should encourage the formation of regional arrangements if they are designed—as they should be—with due regard to the general growth, cohesion and interdependence of the entire free world. Regional arrangements of the kind here considered do not imply regional autarky. Their aim is the progressive elimination of trade barriers within groups, not the erection of new barriers between groups. Regional arrangements should be considered a step in the direction of freeing world trade. We should encourage not only regional economic

groupings but strive for increasingly free relations among these groupings."<sup>5</sup>

A look at the map of North America shows a remarkable geographic partnership—two great nations sharing a vast continent stretching from the Rio Grande to the Arctic, with a mutual undefended boundary line of almost 4,000 miles from ocean to ocean, and still another unfortified border almost 1,500 miles long separating Canada and our new state, Alaska. Both nations navigate the Great Lakes and cooperate on the St. Lawrence Seaway.

Besides geography, the two nations have a common European heritage, share a common language, and, to a large extent, share a common culture. Both have a tradition of political freedom and democratic processes. Their citizens enjoy much the same entertainment, share much the same media of communication, travel freely and migrate from one country to the other, and adhere to a common system of regulated capitalism. All of these likenesses would naturally contribute to economic solidarity if the milieu and premise of mutual free trade were established.

The trade between Americans and Canadians, if not free, is still tremendous. In fact, although the United States and Canada pay the highest wages in the world, each is the other's best customer. The U.S. sells Canada about \$4 billion in goods and services a year; Canada sells the U.S. about \$3 billion a year. The interdependence of each nation on the other is obvious. Of Canada's export trade, 60 per cent moves southward into the U.S., while 70 per cent of Canada's imports moves northward from the U.S. About one-third of U.S. exports and imports, excluding subsidized agricultural foreign trade deals, are with Canada.

What is more, much of this vast trade has to hurdle duties and other restrictions. What U.S.-Canada trade would amount to under a policy of mutual free trade only the venture-some can guess, but there is no doubt that it would be substantially higher.

<sup>5</sup> *The New York Times*, June 16, 1958, p. 16.

TABLE 1

# Nonresident Long-term Investment in Canada

(in millions of dollars)

End of Year	Per U.S. Cent		Per U.K. Cent		Per Other Cent		Total
1900	168	14	1,050	85	14	1	1,232
1914	881	23	2,778	72	178	5	3,837
1918	1,630	36	2,729	60	177	4	4,536
1926	3,196	53	2,637	44	170	3	6,003
1930	4,660	61	2,766	36	188	3	7,614
1939	4,151	60	2,476	36	286	4	6,913
1945	4,990	70	1,750	25	352	5	7,092
1949	5,906	74	1,717	22	340	4	7,963
1953	8,870	77	2,008	18	583	5	11,461
1954	9,692	77	2,181	17	704	6	12,577
1955	10,289	77	2,347	17	832	6	13,468
1956	11,651	76	2,675	17	1,075	7	15,401
1957	13,035	76	2,910	17	1,255	7	17,200

SOURCE: Figures for 1900 from a study by Dr. Jacob Viner, for 1914 and 1918 from work of Professor F. A. Knox, and for 1926 to 1956 from the Dominion Bureau of Statistics (especially CANADA'S INTERNATIONAL INVESTMENT POSITION 1926-54 and THE CANADIAN BALANCE OF INTERNATIONAL PAYMENTS, 1956). Figures for 1957 are estimated by the Bank of Nova Scotia. Investments shown for U.S. and U.K. include some held for residents of other countries. (Offsetting the \$17.2 million of long-term foreign investment in Canada in 1957, Canadian residents held close to \$5 billion in long-term investments abroad; when account is taken of the official exchange reserves and certain other items, the balance of Canada's foreign indebtedness is of the order of \$12 billion.) Also the MONTHLY REVIEW, the Bank of Nova Scotia, Toronto, March, 1958.

Although sharply criticized, United States capital has been instrumental in and actually indispensable to the economic development of Canada (see Table 1). Fully three-fourths of foreign investment in Canada has come from its neighbor to the south. However, it is not the U.S. investment dollar that is being criticized, but rather the way it is being invested. In his Chicago speech, Canadian Minister Churchill made this clear, while he attested the critical importance of U.S. investment.

"New industries established in Canada by the initiative of your people now number more than 300 and, until recently, some 30 to 40 new plants were being added each year. . . . The present government is intensely interested in Canadian development. Development of our resources and expansion of our trade are our main objectives. So allay your fears, bring in your capital, we will help you use it wisely. Your future prosperity is closely linked with ours."<sup>6</sup>

But how was the present North American prosperity achieved? How did the United States and Canada become far and away the two richest countries in the world? The answer is not, as the Communists aver, a munificence of natural resources, although both nations have been blessed with these. After all, such nations as India, Brazil, Russia, and China are similarly endowed and have by no means achieved such standards of living.

The secret of North American prosperity has been free enterprise and free trade over a very wide area. The free trade area, however, is confined within the boundaries of each country. Wider free trade is the formula, since adopted, that Paul G. Hoffman outlined to the Council of the Organisation for European Economic Co-operation on October 31, 1949.

"The substance of integration would be the formation of a single large market within which quantitative restrictions on the movements of goods, monetary barriers to the flow of payments and, eventually, all tariffs are perma-

nently swept away. The fact that we have in the United States a single market of 150,000,000 consumers has been indispensable to the strength and efficiency of our economy.

"The creation of a permanent, freely trading area, comprising 270,000,000 consumers in Western Europe, would have a multitude of helpful consequences. It would accelerate the development of large-scale, low-cost production industries. It would make the effective use of all resources easier, the stifling of healthy competition more difficult."<sup>7</sup>

#### MORE TO BE DONE

The question remains: Are Canada and the United States doing all that is possible to achieve increased economic cooperation and mutual productivity through greater trade and territorial division of labor? The question is all the more pertinent in view of the Communist threat and Mr. Khrushchev's new seven-year plan and boast that the Soviets will outstrip us in living standards by 1972.

The answer to the question, I believe, lies in much fuller economic integration of the North American continent; in short, in the establishment of a giant U.S.-Canada free trade area or common market.

Admittedly, the realization of such a proposal would not be easy. A free trade area, for example, involves such complications as certificates of origin, compensating duties, and so on. A common market means that the member countries would have to agree on a uniform tariff and import quota wall around the periphery of the common market.

The hardest job is to forsake economic nationalism. For in either free trade area or common market, each member country has to sweep away, at once or by degrees, all its impedimenta of protectionism and welcome the competition of the other member countries. This calls for no little economic fortitude.

<sup>6</sup> Canadian press release, November 12, 1958.

<sup>7</sup> William E. Rappard, *The Secret of American Prosperity* (New York: Greenberg: Publisher, 1955), p. 89.



In the case of the United States and Canada, each nation would have to yield on its special protectionist frills, apart from giving up tariffs and quotas. The U.S., for example, would have to modify its "Buy American" act to read in effect "Buy *North* American." Canada would have to reconcile the free trade area with its "imperial preferences," through which Canada and the other British Commonwealth countries effect lower duties among themselves.

Notwithstanding these "costs" and complications, Canada and the United States should be equal to the task. The fact that there are but two countries, with history and geography uniting them, as opposed to the six of the European Common Market with all their differences of language, customs, and former animosities, is in their favor. Then there is the experience of duty-free agricultural implements, which, as a World War II measure, were freely traded over the international border and have been ever since.

It is worth the effort. For the United States, the advantages of free trade with Canada are many. Alaskan-Canadian trade would no longer be stymied by economic restrictions. Alaskan trade with the rest of the United States would no longer be handicapped by lack of easy land access. And all U.S.-Canadian trade would move as freely across the international border as it does across, say, the New York-Connecticut border, the California-Arizona border, or the Alberta-Saskatchewan border.

Moreover, as the Paley Report of the President's Materials Policy Commission indicated, the United States is increasingly becoming a "have-not" nation in many natural resources, quite a few of them strategic. Aside from the fact that the United States imports all of its coffee, cocoa, bananas, tea, and natural rubber, it is increasingly using foreign crude oil and iron ore, and imports 96 per cent of its nickel, 80 per cent of its cobalt, 78 per cent of its bauxite, 86 per cent of its manganese ore, all of its tin, 91 per cent of its chromite, 59 per cent of its tungsten, all of its industrial dia-

monds, 98 per cent of its platinum, and 66 per cent of its mercury.

While it may not have all these strategic items, Canada is a "have" nation in natural resources, perhaps second only to Siberia. Canada is the largest country in the Western Hemisphere and, after the Soviet Union, the largest in the world. East to west along the international border, Canada stretches almost 4,000 miles and north to south, almost 3,000 miles. The most striking geological feature of Canada is the heavily mineralized Pre-Cambrian shield, a V-shaped formation of 1,850,000 square miles of vast ferrous and non-ferrous resources. In addition, Canada is rich in timber, furs, coal, gas, oil, asbestos, uranium, and water power. Militarily, the immediate adjacency of such resources is of the utmost importance.

For Canada, with a population of 17 million, these resources are, practically speaking, useless without capital for their development and customers for their use. The U.S. has both. America has 175 million customers and, excluding the Soviet bloc, produces about half of the world's industrial output, generates more than half of world investment, and creates about 40 per cent of world money income.

Too, with such an enormous market at its doorstep, Canadian industry, if more specialized, would have a much better chance to grow and develop in a tariff-free North American trade area. This fact is brought out by Irving Brecher and S. S. Reisman, two leading Canadian economists.

"Because many naturally efficient Canadian industries are confined mainly to the home market by the American tariff, their expansion is often limited to the rate of growth of Canadian demand. Being geared, accordingly, to the needs of a comparatively small market, they labour under the cost disadvantages inherent in short and non-specialized production runs. The basic effect of United States commercial policy, therefore, has been to deprive potentially significant Canadian industries of the

scale economies which would make a vital contribution to their competitiveness in world markets."<sup>8</sup>

What of Canada's complaint that heavy American investment in her industries is giving non-Canadians a strong voice in the management of the Canadian economy? With a North American free trade area, the complaint would be mitigated by the fact that trade and investment would be free to move south as well as north, and, if need be, direct Canadian investment would be facilitated in U.S. industry with or without Canadian subsidiaries and branches. With perfectly free investment and trade in all directions on the North American continent and with the recognized mutual benefit to both nations, the distinction between Canadian and non-Canadian would lose much of its force. Whatever economic rivalry exists between the two countries would tend to disappear in the team effort, so that the origin of capital would become no more significant than when New Yorkers and Texans invest in Florida or British Columbians invest in Ontario.

Also of significance to both countries is the fact that the decades of delay experienced in mutual public works, of which the St. Lawrence Seaway is the prime example, would quite probably be greatly lessened. Thus, for example, the project for the damming of the headwaters of the Yukon to provide hydroelectric power for British Columbia and the Alaskan Panhandle would have a better chance of approval by both governments.

#### CONSUMER SOVEREIGNTY

But for Canada and the United States, the main argument for mutual free trade is consumer sovereignty. The fallacy of protectionism is an illogical producer sovereignty, that is, a reversion to mercantilism. Producers are

protected, in a sense, superfluously, while consumers are exposed to high-cost, noncompetitive domestic inefficiency. The fallacy was exploded in 1776 when Adam Smith addressed the protectionists of his day, saying:

"Consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer. The maxim is so perfectly self-evident, that it would be absurd to attempt to prove it. But in the mercantile system, the interest of the consumer is almost constantly sacrificed to that of the producer; and it seems to consider production, and not consumption, as the ultimate end and object of all industry and commerce.

"In the restraints upon the importation of all foreign commodities which can come into competition with those of our own growth or manufacture, the interest of the home consumer is evidently sacrificed to that of the producer. It is altogether for the benefit of the latter, that the former is obliged to pay that enhancement of price which this monopoly almost always occasions."<sup>9</sup>

On our continent, the protection issue has seldom been dormant. In 1810, Jefferson's and Madison's Secretary of the Treasury, Albert Gallatin, declared in the vein of Smith that prohibitive duties were capable of destroying competition, of taxing the consumer, and of diverting capital and industry into channels generally less profitable to the nation.

While the advantages of common markets and free trade areas in general are incontestable, there is the danger, as has been pointed out by the German-Swiss economist Wilhelm Röpke, that a common market, in its anxiety to reserve its market for itself, may be just as protectionist or more so than the member countries had been individually. Thus instead of national protectionism, we could see the West turn to regional protectionism with each common market tending to shut out the

<sup>8</sup> Irving Brecher and S. S. Reisman, *Canada-United States Economic Relations* (Ottawa: Royal Commission on Canada's Economic Prospects, 1957), p. 183.

<sup>9</sup> Adam Smith, *Wealth of Nations*, Vol. II (Cannan ed.; London: Methuen & Co., Ltd., 1904), p. 625.

other.<sup>10</sup> In such a situation, a giant North American free trade area or common market would have tremendous leverage for integrating the regional common markets into one grand Western free-trading market. This "supermarket" would not be without parallel, for such a situation was substantially in existence in the nineteenth century. A free-trading economically united West would be at least one very powerful answer to the Soviet economic challenge.

#### A SUMMING UP

There is a strong case for continental unanimity, that is, for a U.S.-Canada free trade area

<sup>10</sup> As an indication of this tendency, a recent joint communiqué by cabinet officials of the U.S. and Canada called for stepped-up action by Western European nations to lower bars on trade with North America. The communiqué expressly called for a termination of quantitative restrictions on imports from North America by Western European countries. *The New York Times*, February 19, 1959, p. 45; and *International Financial News Survey*, XI (March 27, 1959).

or common market. Present efforts at economic integration are hit-and-miss, mostly miss; irritants multiply. Mutual free trade, while not a cure-all, would logically strengthen the economies and raise living standards in both countries. Canada would be richer; the United States would be richer. Relations between the two countries would be closer and far more harmonious.

The achievement of such mutual free trade would not be easy, however. Problems are many; yet the benefits of economic unity would far outweigh the effort. As Canadian Prime Minister John G. Diefenbaker told the Pilgrims Society in New York last October, "If, in each of the problems that arise the leaders of our nations keep constantly before them the realization that the economic strength and well-being of each is essential to the security of the other, co-operation in economic affairs as in defense will be assured."<sup>11</sup>

<sup>11</sup> Canadian press release, October 28, 1958.

A new feature, "Profiles of the Future," makes its first appearance on page 4 of this issue of *Business Horizons*. Each article will deal with the changes and developments that are likely to take place in the years ahead in various industries. From time to time, the feature will include a more general view of broad economic and social changes.



## Depreciation Reform 1

# What Does Business Want?

EDITOR'S NOTE: *In the following two articles, Business Horizons presents an analysis of the tax depreciation allowance question. The authors recently completed an extensive study based on personal interviews with 150 first-ranking financial officers—those most concerned with the depreciation problem—in 51 firms whose total capital appropriations and expenditures are a substantial part of our national total. Ray M. Powell examines various methods for coping with the tax depreciation problem. Donald F. Istvan considers the idea that changes in allowances can be used to alleviate fluctuations of the short-run business cycle.*

**T**HE WIDESPREAD advocacy of depreciation reform, realistic depreciation, or sensible depreciation raises a single basic question: *Is the present deduction for depreciation contributing to an erosion of the productive capital of American industry?* If it is, something had better be done about it. If it isn't, we should probably forget the whole thing.

*Mr. Powell has been appointed Assistant Professor of Accountancy at the University of Notre Dame.*

The question is extremely simple. Unfortunately, finding the answer is more difficult. Nevertheless, discussions with policy makers among the top management of 51 major American corporations have produced some interesting and enlightening answers.

Before a discussion of these answers, however, it may be well to consider briefly three related items that cloud the basic issue. Generally, they fall under the following headings: (1) depreciation as a device to combat business depression or recession; (2) avoidance of higgling over asset lives and rates of write-off; and (3) the inevitable support of anything that will save a specific tax dollar.

The article by Mr. Istvan in this issue deals with the first of these questions. As for the second, life would be considerably more pleasant if all the arguments, searches for dubious facts, and compromises over useful lives and proper rates could be avoided. Concerning the problem of the continued search for a scheme to save taxes at all costs, only this needs to be said: There are always those who will go to any lengths to save a dollar in taxes, whether

it be through litigation, pressure on the legislature, or other means. I do not think it is logical to indict American industry generally on such a charge. On the other hand, there seems to be much more concern among industrial leaders over the likelihood of an insidious attrition of industrial capacity that ultimately could lead to an impairment of our competitive production potential. This impairment is *the significant question*.

It seems appropriate to raise a frequently overlooked point. Our internal revenue administration is charged with doing a job—the collection of revenue. By its very nature, this task somewhat circumscribes the Treasury view of the broader aspects of the problem. In the last analysis, the business firm deals with an agent whose job is to enforce the revenue laws on a firm-by-firm basis.

Sometimes, too, it appears that the legislature looks at depreciation as a sort of ambiguously defined deduction that reduces taxable income and hence tax revenue. This attitude is in itself dangerous. If there is a single phase of the problem that needs repeated emphasis, it is that it must be looked at from a national viewpoint. If we as a nation are eating up our capital because of inadequate tax depreciation allowances, then surely those who should have corrected the situation will be charged with the serious consequences of having failed to do so. Perhaps what we need is a depreciation policy based on maintaining our industrial leadership in the world rather than on administrative concern about whether the useful life of a machine is eight or ten years.

One thing seems certain: If we continue to define income in such a way that depreciation must be computed on historical cost, it is clearly possible to wear out equipment while reporting satisfactory profits. This is largely the result of measuring profits in unstable dollars rather than in physical terms. Whether or not we look at profits from an accounting point of view in terms of historical cost, it seems axiomatic that we as a nation have made no profits until income has been charged with a sufficient cost to provide for the replacement of facilities at *current costs*. Can anyone seri-

ously object to defining profits or net income—or even taxable income—as that remaining only after the *productive capacity* of the national industrial machine has been maintained?

Top management was asked whether, in its opinion, capital erosion was occurring because of tax depreciation allowances and, if so, what should be done about it. The alleged productive capital erosion was recognized by 46 of the 51 firms in the survey. Of this group, 31 firms regard the erosion of productive capital as appreciable to great, while 15 regard it as minor. The remaining 5 firms suggested that the erosion of productive capital is nonexistent or imperceptible.

Without delving further into the contention that productive capital is being eroded, attention may be directed to this second question presented to management: In view of the erosion of productive capital that you believe to be occurring in your firm and elsewhere, how would you redraft sections of the Internal Revenue Code dealing with tax accounting for fixed asset costs to best offset such erosion?

The proposals merit careful consideration. They are seriously advocated by top financial policy makers of some of the world's leading industrial organizations. They have received significant support from people responsible for preserving and improving a major share of our country's capital resources. Perhaps in one of them—more likely in combinations or variations of several—is the way to an intelligent, equitable, and more realistic depreciation policy.

#### TAX DEPRECIATION PROPOSALS

In the most widely advocated revision of the Internal Revenue Code's sections relating to fixed assets, 22 firms approved what may be called optional depreciation. This reform proposal was the first preference of 14 of these firms, and 8 others indicated that this revision would be acceptable as an alternative to their first choice.

Discussions with representatives of these firms indicated that they regard depreciation

TABLE 1

## Comparison of 1954 Code's Depreciation Methods

(Asset cost \$100,000 with estimated life of 5 years and no salvage value)

Year	Straight-Line		Double-Declining Balance			Sum of the Years-Digits		
	Annual Deprec. (1/5)	Total Written Off (to date)	Book Value Not Recovered	Annual Deprec. (40 per cent of book value)	Total Written Off (to date)	Fraction This Year	Annual Deprec.	Total Written Off (to date)
1	\$20,000	\$ 20,000	\$100,000	\$40,000	\$40,000	$\frac{5}{15}$	\$33,333	\$ 33,333
2	20,000	40,000	60,000	24,000	64,000	$\frac{4}{15}$	26,667	60,000
3	20,000	60,000	36,000	14,400	78,400	$\frac{3}{15}$	20,000	80,000
4	20,000	80,000	21,600	8,640	87,040	$\frac{2}{15}$	13,333	93,333
5	20,000	100,000	12,960*	5,184	92,224	$\frac{1}{15}$	6,667	100,000

\* "Trailing-off" may be avoided by switching to straight-line to recover unrecovered cost—less salvage—under Section 1.167 (3)-1 (b) of 1954 Code.

SOURCE: Author's research.

as unrealistic—that the alleged erosion of productive capital is factual, not theoretical. They see erosion to the taxing authority and in some instances to the stockholder and consumer when costs and income are misstated as historical cost is relied on in the measurement of fixed asset expiration.

Experience under the 1954 Internal Revenue Code<sup>1</sup> (Table 1) and under the accelerated amortization during World War II and the Korean conflict has made top management aware that a significant offset to productive capital erosion can be achieved by writing off fixed assets against income prior to the end of full physical life. Funds so recovered can be put back to work profitably elsewhere in the firm. Assuming that taxation rates are unlikely to change during the next several years, it does not appear to top management that there needs to be the great concern of past years on the part of the Internal Revenue Service to look over the corporate shoulder when lives and rates are being set. In addition, they indicated a belief that the corporate community can best establish the economic life of the asset

in the firm because it understands the use of each specific facility better than the Treasury representatives.

In attempting to be wholly objective in talks with management on this vital issue, the obvious question was, "What safeguards do you propose to accompany optional depreciation that will prevent industry from running wild when it is given unfettered leeway in writing off fixed assets for tax purposes?"

One of the two generally proposed safeguards was that the firm be required to book (use for all corporate statement purposes) the same depreciation that it used for tax purposes. This, plus the requirement of consistency in the use of a life pattern of write-off once it was chosen for a given asset or class of assets would tend to prevent abuse of the privilege.

The other suggestion was that classes or brackets for a dozen or more general categories of depreciable plant and equipment be set out by statute, effectively setting a maximum rate. These brackets are similar to the Canadian "broad category approach," which has used 23 categories of assets since 1949. The United States Chamber of Commerce and the Controllers Institute have gone on record as recommending such a class-rate approach.

<sup>1</sup> Of the 51 firms, 23 used the declining balance method at twice the straight-line rate permitted under the 1954 Code; 15 used the sum of the years-digits methods; 6 used both declining balance and sum of the years-digits methods; and 7 used neither.



Most firms noted that, in addition to the prevention of capital erosion, optional depreciation would prevent the economic waste resulting from scrutiny by the Internal Revenue Service of lives and rates. It was also emphasized that, while it might be all right for the Treasury to be stringent with the depreciation allowances for a particular firm in order to get more revenue, this preoccupation with revenue raising might prevent industry's replacement of obsolete or semiobsolete assets. If it prevents the development of industry's investments in new and more efficient assets, national productive capacity will fall behind the level of foreign productive capacities—particularly Russia's—in the use of new and more efficient methods of production. It was contended that depreciation is no longer entirely a matter between a single taxpayer and the government; it must be thought of in terms of the modernization and maintenance of an efficient productive machine on a national scale.

#### *No Changes Necessary*

A preference for the certainty that results from not altering depreciation allowances for substantial periods of time was indicated by 14 firms. Of these, 10 regarded any cut in corporate tax rates as unlikely in view of continued government spending at a high level. They suggested that no change be made in the depreciation provisions of present law, and that it would be unrealistic to ask that any cut in corporate tax rates be made. The 4 remaining firms suggested that any liberalization of depreciation allowances be foregone, but that it would be realistic to work for cuts in the corporate tax rates.

Several who take this position do not necessarily deny that a technical capital erosion is occurring in American industry. They distinguish, however, between corporate financial policy and the determination of income, which is considered an accounting concept. They contend that, during a period of rising replacement costs, financial policy requires businesses to retain earnings sufficient to replace facilities for which the depreciation allowances fall short of replacement cost. This, of course, has

been the traditional backward-looking view of accountants. It would seem to some that the evolution of time and nature dictates that cost shall be historical—besides, it takes less professional competence to master the computations. Those who view the problem in this light recognize the necessity that financial policy involving adequate retention of earnings still be able to maintain a "fair" dividend rate.

It might be argued that we are dealing in part with a problem of semantics. Some would define profits traditionally—computing depreciation on historical cost, but forever tying up a sufficient amount of earnings thus defined to maintain physical capital. Others would define income only after charging costs adequate to the maintenance of physical capital.

#### *Depreciation Exceeding Historical Cost*

So long as depreciation is considered as a charge arising from historically incurred dollar cost of capital assets, it borders on heresy to even think of charging revenue with depreciation in excess of cost. Nevertheless, a number of businessmen with more interest in the preservation of the nation's productive capital than in hidebound tradition have come forward in support of depreciation allowances in excess of historical cost.

*Price-Level Adjustment of Depreciation Charges.* Some form of price-level adjustment of depreciation charges would be considered desirable by 13 firms, 6 of which stated that the price-level adjustment is preferable to any other proposal. This group contends that price-level adjustment of the depreciation change would eradicate an inequity among corporations within a given industry and among industries. The advocates of this approach to depreciation reform indicated that it was necessary to bear in mind the great diversity in asset make-up among firms. Thus, the ratio of depreciable assets to total assets and, more important, the ratio of depreciable assets to firm revenues varies not only among firms in different industries but also among firms in the same industry.

This may result in unfair application of a

uniform tax rate to the taxable income of different businesses. The impact of rising prices will not be the same on cost determination where the rate of turnover of depreciable property varies. For example, assume that the ratio of net income after taxes to net depreciable property in Business A is .0458, that is, 4.58 cents of net income after taxes per dollar invested in net plant and equipment; in Business B, it is .2845, that is, 28.45 cents of net income after taxes per dollar invested in net plant and equipment. This is the actual range of net depreciable property turnover found in our 12-industry, 51-firm sample (Table 2).

This means that if 100 per cent of net income after taxes were dedicated to replacing the depreciable property as it is carried on the books net of depreciation, Business A would have to dedicate 21.83 years' net income while Business B would have to dedicate only 3.51 years' net income to such replacement. The inescapable conclusion, especially in a period of rising prices, is that a uniform corporate tax rate falls very unevenly on industries holding dissimilar mixes of depreciable and nondepreciable properties of varying lives.

If the secular trend of prices for depreciable

productive facilities is upward, certain observations on the diverse effects of such a movement on different industries and firms can be made.

1 In those industries or firms having longer-lived facilities, depreciation on historical cost will result in relatively greater overstatement of profits than in those industries employing shorter-lived assets.

2 This will result in a greater share of the tax burden, assuming a uniform tax rate, being shouldered by those industries or firms having longer-lived facilities.

Not only does the length of time required to cover fixed asset cost with net profits after taxes vary substantially among firms and industries, but the ratio of fixed asset cost to materials and labor cost going into the total cost mix also produces significant inequities. Where a firm's costs are largely for materials and labor, the inflationary impact tends to fall about equally on costs and revenues because they are stated largely in dollars of the same period or purchasing power. But where the average cost of productive facilities was set 10 or 20 years ago under depreciation concepts based on historical cost, intervening inflation is not permitted to have any effect. It cannot be denied, however, that the effect is present. The impact of a uniform tax rate falls most heavily on those firms that have not only a heavy investment in plant and equipment but also a high ratio of plant and equipment to total operating assets.

Generally speaking, the increase in economic well-being has largely come about through placing larger and larger quantities of capital equipment at the hand of the worker. It would seem difficult to make a case for shifting a relatively larger share of the tax burden to those industries that have sought to increase the productiveness of the worker by augmenting the capital equipment he uses. Nevertheless, it appears inescapable that, in a period of rising prices, modernization producing a higher property-to-labor mix is accompanied by a disadvantageous shift in the tax burden under present accounting concepts of income determination.

TABLE 2

## Net Turnover of Depreciable Property

Industry	Turnover (Net Plant and Equipment)*	Years to Recover
Rails	.0458	21.83
Utilities	.0570	17.54
Airlines	.0986	10.14
Chemicals	.1075	9.30
Steel	.1332	7.51
Nonferrous metals	.1519	6.58
Miscellaneous (comparable size)	.1689	5.92
Oil	.1730	5.78
Agricultural and heavy equipment	.2132	4.69
Rubber	.2452	4.08
Automobiles	.2707	3.69
Electrical equipment	.2845	3.51

\* Average of 1953-57 net profits after taxes divided by average 1953-57 net depreciable plant and equipment.

SOURCE: Author's research.

*The Reinvestment Depreciation Proposal.* Fred W. Peel and Maurice Peloubet have advanced the reinvestment depreciation proposal that was found to be acceptable to 9 firms. This method was preferred over all others by 5 of these firms as a solution to the problem of erosion of productive capital.

The plan calls for determination of the price-level rise between the time of a facility's acquisition and its retirement. An index reflecting this rise would be applied to the cost of the facility in order to restate the original cost in the retirement-year dollars. The difference between original cost and cost at retirement *as thus adjusted* would be considered a delayed determination of the depreciation charge. It could be expensed in the year of retirement or carried forward to subsequent years to prevent an unusually heavy impact on reported earnings in any given year.

Reinvestment depreciation requires that the adjusted historical cost of retired assets be re-invested in fixed assets somewhere in the firm to obtain the extra depreciation charge against income. The newly acquired assets, when re-invested, are placed on the books at the historical dollar price of the assets retired. Thus, there is no inflation of the fixed asset account merely because of advances in the price level. Because of this base stock concept, the proposal has been called LIFO for Fixed Assets.

*Economic Depreciation.* The revision of the depreciation provisions of the present law to include consideration of economic depreciation was supported by 6 firms, only one of which placed the proposal as its first preference. This envisions an accurate determination of the percentage of a firm's total fixed assets expiring each year.<sup>2</sup> The historical cost of that percentage of the fixed assets, adjusted to determine the cost expiration in current dollars, would be the depreciation charge for the year.

<sup>2</sup> This is done by use of the well-recognized procedure of combining accurately determined lives for individual assets or groups of assets and then computing an average life for all firm assets. The reciprocal of the average life is the percentage of expiration each year. Or the index can be applied against accounts kept by year of acquisition.

TABLE 3

### Controllers Institute Recommendations

Class	Life (in years)
Buildings	20
Standard and general purpose machinery and equipment and housing for same	10
Furniture and related equipment	10
Special purpose machinery and equipment and housing for same	5
Miscellaneous small equipment chargeable to capital account including office machines	3
Autos	3
Tools, dies, jigs, and patterns	Expense

SOURCE: *Controllers Institute recommendations.*

### Canadian Broad Categories

For 5 firms, an acceptable revision of the present tax law would be adoption of maximum rates, that is, minimum lives, for many categories of fixed assets. Under this plan, the firm would have the assurance of liberal rates established by statute. Of these firms, all operating under and familiar with Canadian tax laws, 4 indicated that they would prefer this plan. They asked for nothing more than the permission to write off historical cost under the broad category approach. The appeal of this method, of course, lies in dispensing with substantiating the reasonableness of the rates and lives to the satisfaction of the Internal Revenue Service.

This proposal is in line with the one recommended by the Controllers Institute to the Joint Committee on Internal Revenue. In a brief submitted at the General Revenue Revision Hearings in 1958, the Institute suggested that the firms be required to establish depreciation for book purposes on the basis of lives no longer than those elected for tax purposes, except where governmental regulation requires otherwise. The Institute also suggested reasonable lives for each category (Table 3).

### Construction Reserve

The proposed "construction reserve revision" of the Internal Revenue Code as it relates to depreciation has its greatest support in the



railroad field. Of the 5 railroads contacted, 4 indicated that it would be an acceptable revision, and 3 indicated a preference for it over all other possible revisions.

Under the plan, no more than the historical cost of the fixed asset, less salvage, is depreciated. There is a variation, however, in the timing of the depreciation charge. In a period of good earnings, for instance, added depreciation charges are made against income and allowed for tax purposes. The reserves thus provided are known as the construction reserve. Expenditures for construction, if made within a five-year period, are charged against these reserves. If not expended within the five-year period, they are returned, together with a penalty assessment, to taxable income. Assets acquired through expenditures chargeable to the construction reserve take a zero basis for subsequent depreciation purposes, since the reserve was created simultaneously with a deductible charge against income.

The proposal as suggested by the Transportation and Communications Subcommittee of the House Committee on Interstate and Foreign Commerce in May, 1958, has depreciation provisions similar to the Merchant Marine Act but was not approved by Congress.

A parallel provision is currently in operation in Australia, where depreciation can be claimed on assets that are to be purchased in a subsequent tax-determination period. Another provision in the Australian tax code permits expensing of the current year's outlays for fixed assets. American mining officials state that the provisions are made available to provide an incentive to the underdeveloped Australian mining areas.

#### *Miscellaneous Proposals*

Revision of the depreciation provisions of the tax law was desirable to 4 firms, but their suggestions cannot be classified as falling within any of the suggested plans. The policy makers of one firm indicated a preference for expensing of capital outlays; another group indicated that they had yet to see an acceptable proposal for revision. One firm preferred a fast write-off system permitting speed-up of rates

during inflation, while another frankly admitted that the management group was so divided on the question of historical cost versus price-level depreciation that they could not indicate a uniform policy recommendation for their firm.

#### OTHER CONSIDERATIONS

There are four additional considerations that deserve some attention. For the sake of brevity, it is probably best to start by listing them.

- 1 A comment on the possible rationale that may underlie the position of 14 firms that desired no change in depreciation legislation
- 2 The problem of capital gains treatment on sale of depreciable property
- 3 Application of the methods of the 1954 Revenue Act to property purchased in used condition
- 4 Willingness to "book" tax depreciation charges if this is necessary to secure more liberal depreciation methods

When asked how they would redraft sections of the Internal Revenue Code dealing with tax accounting for fixed asset costs to best offset the productive capital erosion that they believe to be occurring, 14 firms said they would make no change in depreciation allowances. Of these, 4 said that they would work for a cut in the corporate tax rates. With the exception of a public utility, whose policy makers suggested that regulatory agency problems prevented their use of any liberalized depreciation methods of the 1954 Code, those who responded in this manner generally have a high net profit after taxes per dollar of net plant and equipment investment. The 13 other firms have an average net fixed asset turnover of more than .1800. Theoretically, this means that, in net profits after taxes, they would recover their net plant and equipment investment in 5.5 years. These firms rank at the upper limit in favorable net revenue production per dollar invested in net fixed plant and equipment, and appear better able to offset the

spread between the original and the replacement cost of capital equipment.

While this result might have been expected, it underlines the fact that anyone who advocates revision of the depreciation provisions of the tax laws as an offset to erosion of productive capital does not speak for all of industry.

One of the obvious reasons why the Treasury Department has been reluctant to permit further liberalization of depreciation allowances is the possible abuse of such accelerated write-offs by the business community. The abuse arises if an asset is written off rapidly, in some cases reducing the basis almost to zero, and is subsequently sold at a gain. Under the existing tax laws, such a gain is taxed at a capital gains rate; that is, at a lower rate than is applied against ordinary income.

The search for an equitable tax treatment of depreciation allowances is not aided by this tax windfall; nor does it appear logical that one can argue for more liberal depreciation and limited taxability on gains arising from the sale of depreciable assets at the same time.

Only 2 of the 51 sample firms objected to dispensing with this section of the Code as part of a depreciation reform or tax cut package.

The general revision of the tax laws in 1954 statutorily allowed the sum of the years-digits and the double-declining balance methods of depreciation. But the methods are limited to assets whose original use began with the taxpayer, thus barring application of either method to secondhand assets. Presumably, this was done to stimulate the acquisition of *new* facilities only, but the ability to acquire new facilities depends in part on being able to dispose of the old facilities in the secondhand market. Such liberalized methods can certainly aid in making a market for such used assets.

The great majority of the policy makers maintained that a firm purchasing used assets should be accorded the same fast write-off as the firm acquiring new assets. Final tabulation of the 51-firm responses showed that only 6 would still bar sum of the years-digits and double-declining balance methods of depreciation to the holder of used assets newly acquired.

Slightly more than half of the firms advocated requiring a firm to use for book purposes *no longer* a life than that used for tax purposes in the event some optional or bracket rate of depreciation—such as those recommended by the Controllers Institute—could be legislated. Wherever a position was taken against booking tax depreciation, it was reasoned that one of the first responsibilities of management is to maintain some semblance of level earnings and dividends in order to protect stockholders and the price of the company's stock in the market.

Perhaps he is hypercritical of those arguing against booking tax depreciation or more liberalized depreciation, but Joel Barlow, president of the Tax Institute and head of the Taxation Committee of the Chamber of Commerce, criticized rather severely those who take such a position.

"The deficiency of this group grows out of its shortsighted concern for its own short-range interest. It seems to have a mistaken notion that depreciation is nothing more than a cost with an adverse effect on profits, as well as on the opinions of bankers and shareholders.

"The officials in this group are informed after a fashion. They are simply afraid to take realistic depreciation because this would substantially reduce the paper profits they have been relying on for years to impress their bankers and their shareholders. This is the management group, which is criticized as being more interested in impressing its stockholders than in protecting them or in earning real profit for them. . . . So as not to be unfair or misinterpreted, I hasten to point out that this concept of depreciation as a profit depressant, and management's concern about banker and stockholder relations do not always (or even often) stem from selfish management motives. . . . But, it must be said that, whatever the motivation, both well-meaning and selfish managements must be impressed with the fact that an unrealistic depreciation policy is in nobody's interest tomorrow, no matter how it dresses up the balance sheet today."<sup>3</sup>

<sup>3</sup> Joel Barlow, "The Depreciation Impasse: A Measuring of the Pressure for Change and Strength of the Resistance," *Journal of Taxation*, X (February, 1959), 68-69.

Nevertheless, many policy makers said that they did not desire a rigid booking depreciation requirement that might make the problem of reporting approximately level earnings, even in times of adversity, more difficult. These objections perhaps show that such a requirement would be an effective protection against abuse of depreciation allowances if optional depreciation were made available to the firm. Management was emphatic in its belief that any change in depreciation charges would be made gradually so as not to interfere with management's responsibility to report level earnings.

### CONCLUSIONS

Accountants may desire to restrict depreciation to fixed asset historical cost, but interviews with policy makers from approximately half of the 100 largest domestic corporations have re-emphasized management's concern with the problem of replacement of assets in a period of rising prices. Management policy makers know that unless a firm has the stability of earnings and credit position that will permit it to acquire or replace plant and equipment by borrowing in perpetuity, funds for

replacement and/or improvements can come from only three sources: (1) equity sales; (2) retained earnings (or borrowings that ultimately must be paid out of retained earnings); and (3) depreciation accruals. Any long-run augmentation of any one or more of these three sources represents recognized aid in management's solution to the problem of replacement. More rapid depreciation or depreciation accruals in excess of those presently available would be welcome, although accountants may contend that depreciation's purpose is only that of systematically distributing historical cost over the useful life of the asset.

Since Treasury policy has been to oppose depreciation reform so long as capital gains rates are applied to gains from sales of depreciable plant and equipment, management is willing to forego this particular tax advantage.

It is the consensus of management opinion that there is no logical reason why the purchaser of used plant and equipment should not be permitted to use depreciation methods available to those acquiring new facilities.

Finally, more than half of the policy makers conclude that a requirement of booking depreciation used for tax purposes would be a small price to pay for tax reform.

**T**HE greatest thing a human soul ever does in this world is to *see* something, and tell what it *saw* in a plain way. Hundreds of people can talk for one who can think, but thousands can think for one who can see. To see clearly is poetry, prophecy, and religion, all in one.

—John Ruskin



## Depreciation Reform 2

# Cure for Recessions ?

**I**N RECENT years, we have witnessed an increased clamor for "depreciation reform." One of the arguments presented in behalf of this reform of tax depreciation allowances has been that such allowances play a large part in management's decisions to make capital expenditures. Since the rate of capital spending is tied to the economic health of the nation, popular reasoning has it that the nation's prosperity can be controlled by liberalizing or tightening tax depreciation allowances as economic circumstances dictate. Very few people ever advocate dampening prosperity, so the real issue is the efficacy of liberalizing tax depreciation allowances in an effort to reverse a slipping economy.

Recurring business recessions make this issue a vital one, and the cooperation of the country's business leaders was sought in an attempt to determine the feasibility of using tax allowances as an economic tool. The conclusions drawn from this study of the problem are at variance with most popular, and unsubstantiated, theories voiced in Congress and in the nation generally.

*Mr. Istvan was recently appointed Assistant Professor of Business Administration at the University of Rochester.*

Interviews were held with about 150 top businessmen—including presidents, financial vice-presidents, controllers, economists, and capital expenditure analysts—of 51 of the largest corporations in the country.<sup>1</sup> They lent their ability and experience to the determination of the role of tax depreciation allowances in the capital expenditure process.

These corporations hold more than \$76 billion in capital assets. Their 1957 capital expenditures of \$9 billion accounted for almost one-fourth of the \$37 billion total of plant and equipment spending undertaken in the nation that year.

The officers of each firm visited by the research team were asked to supply information

<sup>1</sup> The 51 firms visited included the following:

Rubber makers	5	Railroads	5
Steel producers	5	Airlines	2
Chemical firms	6	Electrical equipment	
Nonferrous metals	4	manufacturers	2
Auto makers	4	Heavy equipment	
Oil companies	5	manufacturers	4
Utilities	4	Miscellaneous	5

All of the firms rank in the 10 largest in their industry, and 48 of them are within the 8 largest in their industry. Information from only 48 of the 51 firms is used in this analysis. Three firms could not divulge any aspects of their approach to the problem because of company policy.

concerning its system of controlling and evaluating capital expenditures. Information was also obtained from examination of the various forms, instructions, and manuals pertaining to capital expenditure analysis used by the firms. In some instances, copies of actual expenditure requests were supplied.<sup>2</sup>

The help of the cooperating firms has provided a concrete analysis of the issue for those congressmen, businessmen, and economists who have been advocating further depreciation reform by claiming that it will increase the nation's capital spending and alleviate future recessions.

The issue has been before Congress since debate began on the 1954 Internal Revenue Code. A minority group there contended that the proposed "fast" write-offs would eventually decrease federal revenue by nearly \$19 billion. However, the report of the Committee on Ways and Means stated that revenues would not suffer after the first year because the stimulating effect of the new write-off methods would result in a broadened tax base and in new business fostered by the increased capital investment.<sup>3</sup> Several bills presented in Congress in the first half of 1958 dealt with this type of attack on the then-current recession. These proposals were based on the theory that depreciation liberalization would so stimulate capital spending in the short run that the prevailing downturn in business activity would be reversed. Some theorists have gone even further, advocating a continuing manipulation of tax depreciation allowances as a panacea for the short-swing business cycle.<sup>4</sup>

It would be convenient if there were some scientifically precise way of measuring the short-run influence of depreciation allowances on the aggregate, or total, rate of capital spending. Unfortunately, the complex interre-

lations of economic factors influencing plant and equipment outlays make it impossible to isolate precisely the effect of any one factor on total capital formation. However, the problem is not hopelessly beyond analysis; it is logical to infer the general behavior of the business community from a representative sample.

In making the analysis from the sample, a careful theoretical study was first made of the exact role that tax depreciation allowances could play in capital expenditure decision-making processes if management would permit it. Second, the actual role of depreciation allowances in capital spending decisions was ascertained from the 48-firm sample. The conclusions drawn were these:

1 Changes in tax depreciation allowances do *not*, because of present business decision-making techniques, influence capital spending in the short run.

2 Favorable changes in tax depreciation allowances might influence the development of the nation's productive facilities in the long run, but certain special conditions must prevail.

To completely understand the bases for these somewhat unusual conclusions, it is necessary to be familiar with the theory and analysis on which they are founded. The theory deals with the basic techniques of making decisions concerning the expenditure of billions of dollars of capital funds.

#### THEORETICAL BACKGROUND

Capital expenditures made by a firm can be divided into two categories. In one group are those dictated by emergency conditions or regulatory mandate, and over which the company has little or no control. While expenditures in this category are not absolutely essential—there is always the alternative of going out of business—they are nearly so within the

<sup>2</sup> In all, 44 firms make use of a standard form for expenditure request and authorization, and 33 of them have some sort of manual or written instructions explaining the mechanics and theory of the evaluation techniques employed.

<sup>3</sup> See John Ryan, *Current Depreciation Allowances, An Evaluation and Criticism* (New York: Fordham University Press, 1958), pp. 68-69.

<sup>4</sup> It is the short-run considerations that are the prime concern of this article. The long-run aspects will be touched on only briefly. Furthermore, the liberalizations of tax depreciation allowances under examination are limited to those concerned with speeding up historical cost depreciation.

assumption of rational managerial behavior. In the second group are expenditures over which the management of the firm must exercise an informed judgment. Decisions to replace equipment, add to product lines, expand capacity, or enter new fields all call for discretion in allotting capital funds. The businessman who invests on hunch alone is stacking the deck against himself, since significant aids to decision-making are available.

Common to all such aids is the requirement that there be a proper determination of the dollar operating *advantage* of each proposal for capital expenditure. Thus, the initial analytical step is a forecast of a specific number of dollars to be gained through the proposed investment. Once the advantage figure has been ascertained, a measure of *acceptability* must be applied to it. This is a device for allowing management to determine how a particular proposal compares with other proposals. It can also be used to insure that the advantages of a particular proposal will stand above a predetermined minimum level of acceptability. In a firm where funds for capital spending are plentiful, the measure of acceptability is used to insure that the advantages meet the predetermined minimum level; all proposals that do meet it will be implemented. In other firms, where funds are not so readily available, the measure of acceptability is also used in comparing the various proposals that are competing for the limited funds.

In the expenditure evaluation process just described, the determination of dollar operating advantage is, to a considerable extent, an engineering problem. Acceptability, on the other hand, is financial- and profit-oriented and may be measured differently in different firms. A number of recognized concepts have evolved in this area, and it will be necessary to examine their implications. They go by such ambiguous appellations as payback, simple rate-of-return, time-adjusted rate-of-return, and MAPI, the formula technique of the Machinery and Allied Products Institute.

The twofold analytical process of advantage determination and acceptability measurement

used for decision-making in the capital investment area is frequently referred to as the *economic evaluation*. It is in this analytical process that any impact of the liberalization of tax depreciation allowances must be felt if these allowances are to be significant in influencing business capital investment.

In a more detailed examination of the analytical process of capital investment evaluation, in which faster depreciation must exert its influence, a word of caution is appropriate. Not all firms use the various analytical concepts in their theoretical pure forms. There are many modifications, deviations, and combinations. Nevertheless, in every case where some use, even in a watered-down form, was made of the scientific approach, it was apparent that the firm was definitely ahead of competitors who refused to approach the capital investment problem in this manner.

### *Payback Analysis*

The essence of payback analysis is that it determines the time period over which the dollar advantage will return the capital investment. While payback may be computed in a number of ways, all methods have this in common: None of them measures profitability (rate of return on investment), and all compare an estimate of annual operating advantage with some concept of investment.

As a simple example of the method, an investment of \$5,000, which will provide additional annual income of \$2,000 a year, would have a payback period of 2.5 years computed in the following manner:

$$\frac{\text{Investment}}{\text{Advantage}} = \frac{\$5,000}{\$2,000} = 2.5 \text{ years.}$$

Presumably, the shorter the payback period, the more desirable the contemplated investment. Differences in technique arise in the application of the method because investment can be taken as initial or average, total or equity, or with or without regard to salvage recovery. Similarly, operating advantage can be considered before or after financing costs, depreciation, and taxes.



TABLE 1

## Methods of Liberal Tax Depreciation Allowance and Degrees of Proposal Acceptability

Expenditure Proposal Assumed: Initial Investment—\$1,000,000 (all in first year)  
 Operating Advantage—\$400,000 per year (before depreciation and taxes)  
 Income Tax Rate—50 per cent  
 Economic Life—10 years

Type of Tax Depreciation Allowance*	Payback after Tax (in years)	Simple Rate-of-Return (per cent)			Time-Adjusted Rate-of-Return (per cent)		
		Initial Year Return Only			Average Return over Life		
		After Taxes and Deprec.† (per cent)	After Taxes and Deprec.‡ (per cent)	After Taxes and Before Deprec. (per cent)	After Taxes and Deprec.† (per cent)	After Taxes and Deprec.‡ (per cent)	After Taxes and Before Deprec. (per cent)
	Col. Nos. (1)	(2)	(3)	(4)	(5)	(6)	(7)
Straight-line	4.0	15.0	15.0	25.0	15	15	25
Sum of years-digits	3.6	10.9	19.1	29.1	15	15	25
Double-declining balance	3.6	10.0	20.0	30.0	15	15	25
Initial allowance (25 per cent) double-DB on remainder	3.5	7.5	22.5	32.5	15	15	25
Triple-declining balance	3.2	5.0	25.0	35.0	15	15	25
Declining balance (40 per cent)	3.0	0.0	30.0	40.0	15	15	25
Expensing in initial year	2.7	0.0	30.0	40.0	15	15	25
Amortization (5-year)	3.1	10.0	20.0	30.0	15	15	25

\* Tax benefit carry-back and carry-forward is assumed to apply where allowance is greater than earnings.

† Using tax depreciation in computation.

‡ Using S-L depreciation in computation despite the use of some other method for tax purposes.

NOTE: The above example is not specifically a replacement situation. If it were, the tax depreciation allowance of importance would be the difference between that still available to the retiring facility and that which will be available to the replacing facility.

SOURCE: Author's calculations.

**Payback and Depreciation.** Any payback analysis that will reflect the benefits of liberalized depreciation allowances must define operating advantage in after-tax dollars. In the example, if the \$2,000 operating advantage necessitates the payment of \$1,000 in additional taxes, the payback period becomes 5 years instead of 2.5 years.

The results reached in much of the following analysis are illustrated in Table 1, which shows the relative advantages of various depreciation methods. A word as to the computation of the results portrayed in the table may

be helpful. For example, the payback period under the straight-line method is computed:

Dollar advantage of investment	\$400,000
Increase in income before taxes and depreciation	\$400,000
Depreciation ( $\$1,000,000 \div 10$ )	100,000
Net income before taxes	\$300,000
Taxes at 50 per cent of net income	150,000
Dollar advantage after taxes	\$250,000
Payback period ( $\$1,000,000 \div \$250,000$ )	4

(The effects of depreciation and taxes have been similarly taken into account in the computation of other measures of acceptability in Table 1.)

If only the *initial* year's after-tax advantage is considered, any depreciation method that provides a relatively larger deduction during the first year of the asset's life will increase the dollar advantage attributable to the investment. The increase in dollar receipts will be the same no matter what depreciation method is used; but taxable income, and hence tax payments, will be reduced, leaving more dollars to apply as payback. However, the computation of payback based on initial-year advantage under depreciation methods providing a relatively large deduction in the first year is quite illusory. If the operating advantages over the entire life of the facility are considered, the early-year advantages of the more rapid write-off will be counterbalanced by smaller advantages as a result of larger tax bills in later years.

There are, of course, benefits to be gained by relatively large tax deductions in the early years of an asset's life that do not enter into the payback computation at all. These generally relate to the interest to be earned or profits to be made with the funds temporarily remaining under the firm's control by virtue of the postponement of tax payment. This will be particularly important where the before-tax advantage of the asset is not stable, but is initially large and declines thereafter. This will also be of importance to small businesses where the rate of tax may be progressively graduated.<sup>5</sup> The computation of payback based on initial-year advantage under fast write-off will, perhaps, reflect benefits of this kind in a rough sort of way. But they are not indicated either directly or accurately, and no

<sup>5</sup> In the case of corporations, current rates are 30 per cent on the first \$25,000 of taxable income and 52 per cent on the remainder. The lower rate on the first \$25,000 block of taxable income is a definite inducement to small businesses to average out their income. Individuals and partners are subject to rates ranging from 20 per cent to 91 per cent.

account is given to the remaining useful life of the asset beyond the payback period.

Thus, while changes in tax depreciation allowances theoretically can influence the rate of capital expenditure in firms using a payback analysis, the influence would be indirect and would occur only if a particular type of payback analysis were used.

### *Simple Rate-of-Return Analysis*

The measure of acceptability commonly called simple rate-of-return determines the ratio of annual dollar advantage to investment in the facility. In its simplest form, it is computed:

$$\frac{\text{Annual advantage}}{\text{Investment}} = \frac{\$2,000}{\$5,000} = .40.$$

Obviously, simple rate-of-return is merely the reciprocal of the payback index. Again, numerous variations in computation are possible, depending on whether advantage is determined before or after financing costs, depreciation, and taxes and whether investment is initial, average, gross, net, total, or equity. Of course, simple rate-of-return must be after taxes if the tax depreciation allowance is to have significance in the results obtained.

*Simple Rate-of-Return and Depreciation.* In Table 1, initial-year simple rate-of-return is computed for various depreciation methods using alternatively as advantage:

**Column 2:** Advantage computed after depreciation used in computing tax liability

**Column 3:** Advantage computed after using straight-line depreciation, despite the use of some other depreciation method for tax purposes

**Column 4:** Advantage computed without any deduction for depreciation

Simple rate-of-return shows substantial advantages for fast write-off based on initial-year results. But again, as in the case of payback, this is somewhat illusory. In columns 5, 6, and 7 of Table 1, simple rate-of-return is applied to average instead of first-year advantage with the rather surprising result of no differential benefit arising from use of any depreciation

method. To contrast the most conservative method (straight-line) with the most liberal (100 per cent expensing in the initial year), the following computations are presented:

#### Straight-Line:

Total advantage (10 years $\times$ \$400,000)		\$4,000,000
Total depreciation	\$1,000,000	
Total tax ( $\$3,000,000 \times .50$ )	1,500,000	2,500,000
Total advantage after depreciation and taxes		<u>\$1,500,000</u>
Average annual advantage ( $\$1,500,000 \div 10$ )		\$ 150,000
Simple rate-of-return ( $\$150,000 \div \$1,000,000$ )		.15

#### Immediate Expensing:

Total advantage (10 years $\times$ \$400,000)		\$4,000,000
Tax refund due to carry-back ( $\$600,000 \times .50$ )		300,000
Total advantage, including refund		<u>\$4,300,000</u>
Total depreciation	\$1,000,000	
Total tax ( $\$3,600,000 \times .50$ )	1,800,000	2,800,000
Total advantage after depreciation and taxes		<u>\$1,500,000</u>
Average annual advantage ( $\$1,500,000 \div 10$ )		\$ 150,000
Simple rate-of-return ( $\$150,000 \div \$1,000,000$ )		.15

It seems obvious that the same conclusions may be drawn from initial-year application of simple rate-of-return (columns 2, 3, and 4 of Table 1) as were obtained under payback. Any benefit that accrues from fast write-off derives from the interest-free use of money gained from the postponement of tax payments or from harmonizing early-year depreciation allowances with relatively greater early-year before-tax advantages of the facility. It is possible for changing tax depreciation allowances to influence the rate of capital expenditure of firms using simple rate-of-return analysis, but the influence would not be direct and would apply only if particular types of evaluation were used.

#### Time-Adjusted Rate-of-Return Analysis

The time-adjusted rate-of-return, or the *discounted cash flow* as it is termed by Joel Dean,<sup>6</sup> its leading proponent, differs from the simple rate-of-return in that it takes into account the time as well as the dollar dimension of operating advantages. It discounts future after-tax dollar advantages to their present value and makes possible the comparison of advantages to be derived from facilities that will have different life spans. If it is anticipated that facility A will produce a total after-tax advantage of \$100,000 during its life span of 10 years and facility B will produce an advantage of \$100,000, but over 20 years, it is obvious that the present value of the anticipated advantages of facility A will be substantially greater than the present value of the advantages to be derived from facility B.<sup>7</sup>

Two basic methods are employed in applying this technique to estimated future advantages. One is to determine the interest rate that will discount the future advantages to a present value equal to the contemplated investment. This interest rate is the time-adjusted rate-of-return. The second method applies a predetermined rate of interest, usually a weighted cost of capital, to all proposals. The result is the present worth of the advantages of each proposal at that rate of discount. Projects that are presently worth more than the contemplated expenditure are acceptable, those worth less are rejected. In the purest form of this method, the intended investment must be adjusted so as to determine its value at the point of time identical with that to which anticipated advantages have been discounted. Thus, if investment inputs will be spread over some period of time, they must be adjusted forward, by compounding, to that zero point where expenditures are considered to cease and earnings begin. This can be done

<sup>6</sup> See Joel Dean, *Capital Budgeting* (New York: Columbia University Press, 1951) or any of several articles by the same author.

<sup>7</sup> Using a 6 per cent rate of discount, the relative present values are A, \$73,601; B, \$57,350.



by determining the rate of interest that will equate the present value of both the outlays and inflows.

*Time-Adjusted Rate-of-Return and Depreciation.* To be used correctly and with meaning, the time-adjusted rate-of-return technique requires that the best possible estimates be made of the net cash flows in each year of the projected life.<sup>8</sup> If this is done, the advantages of any liberalized tax depreciation allowances can make themselves felt in concrete terms, and it is theoretically correct to assume that the capital expenditures made by the firm will increase correspondingly. Table 1 gives an indication of the differing "true" rates-of-return that can be obtained from an assumed set of facts when the only variable factor is the tax depreciation allowance.

#### MAPI

Another technique for ascertaining the acceptability of a proposed expenditure is the MAPI formula approach of George Terborgh.<sup>9</sup> It is designed primarily for replacement-type expenditures. To simplify calculations, the system employs a formula and charts into which have been built assumed variables as to salvage value, taxes, debt ratio and cost of capital, economic life of the asset, earnings pattern of the facility, and tax depreciation write-off. Use of the chart produces an acceptability indication relatively comparable to that obtained by the time-adjusted rate-of-return technique. Because of the assumptions used in constructing the charts (there is actually a choice of charts for slightly varying circumstances), the system is not suitable for all firms under all circumstances. Each chart does, however, enable the user to obtain an indication of the effective rate of return when using either straight-line tax depreciation or a com-

promise between the double-declining balance and sum of the years-digits methods.

*MAPI and Depreciation.* Using the facts from Table 1, the MAPI formula produces the following results:<sup>10</sup>

	MAPI Rate-of-Return
Straight-line tax depreciation	11.2
Combination of declining balance and sum of the years-digits	12.1

No doubt, MAPI charts reflecting the effect of any future liberalization of tax depreciation allowances will be made available to firms employing this measure of acceptability.

After this brief review of the theoretical role that liberalized tax depreciation allowances could play in stimulating capital expenditures, it is significant to note that in practice the theory breaks down.

#### DEPRECIATION IN PRACTICE

An analysis of the material gathered in discussions with the sample of major business firms makes possible the summary in Table 2.

Only the 7 firms using either time-adjusted rate-of-return or the MAPI formula as a principal measure of acceptability are able to actually ascertain the benefits of a tax depreciation allowance more liberal than straight-line. The 37 other firms using payback or simple rate-of-return are able to gain only a vague notion of these benefits, and then only if these measures are computed in a manner that lends itself to this insight; that is, computations based on anticipated initial-year results. A numerical breakdown of firms that do and do not calculate their acceptability measure in such a way as to indicate in some degree the benefits of tax depreciation allowances is presented in Table 3.

<sup>8</sup> It is possible to group similar years and to construct simplifying tables that facilitate the calculations while still employing the principle.

<sup>9</sup> George Terborgh, *Business Investment Policy* (Washington, D.C.: Machinery and Allied Products Institute, 1958).

<sup>10</sup> In the example used, there is neither salvage value nor avoided future capital consumption. This does not preclude using the chart or formula.

TABLE 2

### Measures of Acceptability Used for Expenditure Evaluation

	Pay- back	Simple R-o-R	Time- Adj. R-o-R	MAPI
Number of firms (44°) using a particular ac- ceptability measure as the only, or prime, measure	13	24	5	2
Number of firms using a particular acceptabil- ity measure in a sup- plementary manner	21	8	9†	0
Total firms using in some way	34	32	14	2

° Four firms used none of these methods. One does not use an economic analysis at all, claiming that its expenditures are dictated by competition. The other three indicate that decisions are made solely by unaided judgment, or, as one executive put it, "... we fly by the seat of our pants."

† All nine of these firms indicate that the time-adjusted rate-of-return is used only rarely, for very large projects. It was not possible to determine the balance in dollars between the projects measured this way and those receiving other treatment.

SOURCE: Author's research.

TABLE 3

### Types of Depreciation Used in Expenditure Evaluations

	Liberal- ized Tax Depreci- ation	Nonliberal- ized Tax Depreci- ation	Deprecia- tion Not Consid- ered at all
Payback	5	6	2
Simple R-o-R	15	6	3
Time-adjusted R-o-R	2	3	--
MAPI	1	1	--
Total	23°	16	5

° Including several firms who use a composite-rate depreciation for both tax and books that is more favorable than either double-declining balance or sum of the years-digits. In addition, two of the firms not normally giving consideration to tax depreciation indicated that it is used in those few cases where the time-adjusted rate-of-return is calculated.

SOURCE: Author's research.

It is important to note that the one firm presently using the MAPI approach and the three using time-adjusted rate-of-return without consideration of tax depreciation allowances are planning to revise their analysis techniques to give weight to this factor. Highly

significant is their indication that such a revision will probably require a year or more because of procedural and educational difficulties.

With only 23 of the 48 firms considering the more liberal tax depreciation allowances in evaluating the bulk of their capital expenditure proposals, it is evident that the impact of such allowances on aggregate spending is not as great, in the short run at least, as has been suggested in some quarters. It would appear that the effect of allowances is not likely to be nearly so positive and definite as a purely theoretical analysis might indicate. The explanation seems to lie in the fact that methods of capital expenditure evaluation most commonly in use at the present time are not designed to reflect clearly and definitely the advantages of more liberal allowances. Advocacy of non-emergency fast write-off is of relatively recent date; therefore, it is perhaps not surprising that there has not been a wider adoption of techniques designed to present a more precise evaluation in the new tax depreciation climate.

### Competition for Limited Funds

If the more rapid write-off is available for all newly acquired and not previously used depreciable property, every proposal submitted will look more favorable to some degree. If the funds available to a firm for capital spending are limited, which is generally the case in the short run, and the various proposals are in competition for them, the total amount of capital expenditures made by the firm *this year* will be the same regardless of whether liberalized depreciation, straight-line depreciation, or no depreciation is considered in the analysis. The only possible this-year effect of considering the liberalized applications would be a more accurate ranking of the proposals in order of desirability, thus insuring that the funds already earmarked for spending are used to best advantage.

The case is different if the firm is able and willing to obtain the funds needed for all worth-while projects. Even though some rearrangement may take place among projects,

the total volume of expenditures will be increased. If the firm evaluates all proposals against a predetermined minimum of acceptability, the more favorable appearance obtained by using liberalized tax depreciation allowances will cause more of the proposals to stand above the minimum. This will be true whether the more accurate measures of acceptability, such as time-adjusted rate-of-return or MAPI, or the cruder payback or simple rate-of-return are used. Marginal and slightly submarginal projects will be raised into the realm of acceptability. It is interesting to note in this connection that only a handful of the firms indicated that they were committed to a policy of providing funds for all worthy projects. In the majority, the factor limiting the volume of capital expenditures in the short run is a lack of dollars rather than a dearth of proposals with sufficient merit. Even if all firms were in a position to evaluate correctly the effects of tax-deductible depreciation, it seems doubtful that the liberalization of allowances would produce a marked fillip to business activity in the short run.

#### SUMMARY

##### *Short-Run Considerations*

There are three salient points relating to the influence of liberalized tax depreciation allowances on the short-run level of capital expenditures.

- 1 The evidence indicates that less than half of the firms studied analyze their proposed expenditures in a manner that shows the benefits of liberalized write-offs.
- 2 There is some evidence that it takes, and probably will take, a rather long time to incorporate liberalized tax depreciation allowances into a decision-making process.
- 3 The majority of firms have a limited supply of funds available for capital expenditures in any given year.

These three points substantiate the conclusion that changes in tax depreciation allowances do

not greatly affect capital expenditures in the short run.

To these points should be added a view shared by many of the executives interviewed; that is, future allowances do not influence present expenditures. If depreciation has any influence at all, it is because of the write-off of past years.

##### *Long-Run Considerations*

A substantial part of the funds used for business capital expenditures is obtained from earnings—after both dividends and taxes—retained during current or past periods. For a variety of reasons, some firms are unable or unwilling to add to these funds by borrowing or acquiring new equity capital.<sup>11</sup> Where this is the case, smaller tax bills resulting from the more liberal tax depreciation allowances can help to provide funds. It should be noted, however, that they provide them permanently only to a firm that can avoid the greater taxes caused by smaller allowances in later years. It is possible to push off this retribution continuously or, in other words, to extend permanently the "interest-free loans," but only in a firm that is continuously expanding at such a rate that fast depreciation allowances on newly acquired assets offset the loss of depreciation allowances on the older facilities. Many of the corporate officers with whom this point was discussed indicated that they felt the rate of expansion in their companies was sufficiently great to take advantage of accelerated depreciation over the long run.

There is no reason to believe that the same long-run stimulant to capital expenditures would not result from a general reduction in corporate tax rates, possibly to an even greater degree. On the other hand, there is no assurance that the increases in earnings brought

<sup>11</sup> See Marshall Colberg, William Bradford, and Richard Alt, *Business Economics, Principles and Cases* (Homewood, Ill.: Richard D. Irwin, Inc., 1957), pp. 421-50, for an excellent discussion of this problem.



about by tax rate reductions would be used for increased capital expenditures looking toward plant expansion or modernization. It is possible that the use of more liberal depreciation allowances constitutes a self-imposed admonition to management: Expand or be prepared to meet larger tax bills!

One final point requires brief mention. Some have championed the selective use of liberal tax allowances for particular industries or particular kinds of facilities. The objective here, it is professed, would be to allow a governmental agency to influence the flow of capital funds to particular industries or developments. It would appear that such selective manipulation would increase the rate of capital spend-

ing in the areas so favored. This would be true in the long run and possibly in the short run if attempts at stimulation were sufficiently potent.

Putting aside the political and emotional problems such a policy might generate, the question still remains as to whether such selective development could not better be accomplished by more direct means. Depreciation, however indeterminable, is in the nature of a fact. It is appropriate to question whether the inherent uncertainty that necessarily surrounds the determination of depreciation should be allowed to mask what would otherwise be clearly recognized as economic juggling.

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# Teaching Executives via Simulation

*Candidates for top management can practice decision-making.*

ONE OF the most stimulating developments in the field of management during recent years is the simulation of organizational systems. Electronic computers are employed to manipulate complex mathematical and logical models in order to dynamically represent certain aspects of the organization's performance over extended periods of time. Simulation shows great promise of providing a laboratory that is invaluable in fundamental research and in teaching.

## TECHNIQUES OF SIMULATION

### *Its Uses*

The student who aspires to a career in management should obtain a thorough knowledge of the American economic system and a competency in the use of the management process. He should acquire a broad understanding of the functional areas of business and the interrelationships between them. The recently developed technique of management decision

simulation embodies important aspects of each of these basic areas and provides a laboratory in which students of management may develop the necessary knowledge and understanding of the competitive economy.

One of the major problems in promoting men from functional areas into higher management positions is that these men may have become so specialized in their area of major experience that their perspective of the total organization is destroyed. Management decision simulation can be a valuable tool for reorienting the perspective of these overspecialized men. In this connection, it has been predicted that the influence of the presently developing information technology may be to widen the gap between middle management and top management by the substitution of programmed decision rules for middle-management judgment.<sup>1</sup> If and when this de-emphasis of the importance of middle management occurs, then our traditional source of

Mr. Martin is Associate Professor of Business Administration, Indiana University.

<sup>1</sup> See Harold J. Leavitt and Thomas L. Whisler, "Management in the 1980's," *Harvard Business Review*, Vol. XXXVI (Nov.-Dec., 1958), 41-48.

top-management material will no longer exist, for middle-management experience will not be adequate preparation for top-management jobs. Management decision simulation may thus by default become the only experience that prepares a man for a top-management position.

Known by such names as Management Gaming, Executive Decision Simulation, and Executive Decision-Making Laboratory, this technique brings to the classroom a valuable opportunity to demonstrate the complexities continually faced by management in sequential decision-making under uncertainty.

#### *How It Works*

To obtain a better understanding of this technique, we may visit a classroom in which a group of five or six students, surrounded by reports and charts, is engaged in a lively discussion:

"We've got to reduce that inventory; let's cut price a nickel."

"I think we should increase advertising to stimulate our sales."

"No, we'd better cut back on production."

"Remember, our labor contract comes up for renegotiation soon! We'll need that inventory then so that we can afford to run the risk of a strike."

Similar discussions are occurring in other groups in different rooms. Each of these groups represents the management of an individual firm that, by making certain management decisions each quarter, is competing with the others for sales and profits in the same industry. On the basis of these decisions, a referee, either human or electronic, determines the outcome for each of the participating firms. These results are then reported to the groups as feedback information that provides the basis for decision-making for another period's operations. This process of sequential decision-making may be continued for several hours, representing several years of the firm's operations.

Since the development, about two years ago, of a top-management decision game by the American Management Association, the

use of this technique has grown until today there are about 35 different simulation exercises in use or under development. Four of these have been used over 100 times each, involving an estimated 8,000 participants.

Historically, these educational techniques involving competition among firms have been referred to as games because they are an outgrowth of the war games that have been used for years in military training. In this historical context, *game*<sup>2</sup> is a technical term denoting a simulation in which the results for one group depend on the actions of their competitors—a situation that is obviously desirable for management training but almost impossible to obtain in any other classroom technique. Because of the frivolity commonly associated with the word, this terminology has frequently become a liability to the technique; at times it has adversely affected the attitudes of both educators and participants. Although *simulation* may therefore be a more satisfactory term, if only because it is relatively unfamiliar to most people, the term *game* will be used in the following discussion to denote a simulation involving direct competition.

Perhaps the most obvious advantage of the use of this technique is the involvement and enthusiasm engendered in the participants. The discussions that arise during the play are often of a highly emotional nature, and many players have found themselves unable to sleep the night following such an experience. Participants frequently devote several hours before the game session to the preparation of detailed policies, development of special graphing and budgeting techniques, and analysis of past game runs. If the only contribution of management gaming were to arouse the enthusiasm of the student and stimulate his thinking about the problems associated with decision-making, the technique would be of great educational value.

<sup>2</sup> This technique has practically nothing to do with the well-known *mathematical theory of games*, which is an attempt to formulate a mathematical theory of decision-making in situations in which the outcome of a decision also depends on the course of action chosen by one or more competitors.



A specific version of a top-management decision game will give a better understanding of the technique, its advantages, and its limitations.

#### A GAME AT INDIANA

In a typical Executive Decision Game at Indiana University,<sup>3</sup> each period of play represents one quarter of operations, during which each team must decide on price, production volume, advertising budget, research and development budget, and investment in additional plant capacity. In addition, once each year a labor negotiation decision is also made by each firm. These decisions are punched into cards and fed into an intermediate-sized electronic computer<sup>4</sup> that utilizes a predetermined set of mathematical equations, simulating economic relationships, to calculate the results for each firm.

In the first phase of the calculation, the total industry complex of prices, advertising, and research and development decisions, combined with an economic index (which may be controlled by the administrator of the session to simulate varying economic conditions) is used to determine the total industry sales. This total industry sales quantity is then divided among the competing firms by means of a formula involving their individual prices, advertising budgets, and research and development budgets to obtain the potential sales.

However, a firm cannot sell goods that it does not have available, so the actual sales of a firm must be obtained by comparing potential sales with goods available for sale (beginning inventory plus production) to determine actual sales and ending inventory. A portion of the sales lost by a given firm because of lack of goods are distributed among its competitors, assuming that they have the goods available for sale. Sales multiplied by price determines revenue, and the costs for each firm are

determined by the labor rate, material costs, and the relationship between production and capacity for that firm. The computer is then in a position to produce a report similar to the accompanying sample. Each report contains confidential information pertaining to the individual firm as well as such information as prices, economic index, and rankings of sales, advertising, and product quality pertinent to the entire industry, which may be analyzed before making the next set of decisions.

Usually, the teams are told that their performance will be judged on the basis of how they perform their over-all function of management. However, the most convenient measure of performance to the players is total profits, and they usually engage in an extremely lively competition on this basis.

#### *Administrative Considerations*

There are several very important considerations associated with the administration of a game session. In the first place, although the simulation attempts to present a realistic situation in which the participant can draw on his academic background and business experience for assistance in orienting himself to the task at hand, the simulation is an abstraction of a particular real or hypothetical industry in which many of the considerations that would normally be of importance have been eliminated. Therefore, it is necessary to teach the participants the "rules" of the game and to orient them to the hypothetical situation that they will face. It is apparent that misunderstandings of the rules can seriously lower the effectiveness of the experience, so well-written descriptions distributed several days before a one-hour briefing session and supplemented by several quarters of preliminary off-the-record practice should all be used to provide a fairly effective method of group orientation.

On the other hand, this does not imply that the mathematical model of the game is explained in detail. One of the realistic problems involved in the simulation is that of obtaining through experience a more concrete understanding of initially vague relationships.

The time allotted to making the decisions and the length of time involved in the run are

<sup>3</sup> An extensively modified version of the UCLA Management Game II developed by Professor J. R. Jackson and associates. The modifications were made by me in consultation with other members of the faculty of the Indiana University School of Business.

<sup>4</sup> The IBM type 650 magnetic drum electronic data processing machine.

## A Report of Performance in an Executive Decision Game

(Sample quarterly report for Firm 1, Period 3)

Profit and Loss		Financial Condition	
Income from Sales.	\$3,178,767	Assets	
Expense		Net cash assets	\$ 880,925
Direct labor	\$ 986,359	Inventory value	1,458,096
Material cost	725,120	Plant net book value	10,546,400
Administration and selling	367,161	Owner's equity	\$12,885,421
Advertising	278,000	Statistical Information	
Research and development	200,000	Sales volume	478,730
Depreciation	261,190	Per cent of industry sales	16.32
Miscellaneous	278,390	Current inventory quantity	438,789
Subtotal	\$3,096,220	Production capacity next quarter	527,320
Reduction in inventory value	\$ 120,525—	Industry demand index	115
<b>Total</b>	<b>\$2,975,695</b>	Raw material cost per unit	\$1.408
Profit before income tax	\$ 203,072	Direct labor hours per unit	.699
Addition to income tax fund	105,597	Labor rate per hour	\$2.74
Net profit after income tax	97,475	<b>Firm number</b>	1 2 3 4 5 6
		Price	\$6.64 6.53 6.54 6.55 6.60 6.29
		Ranking	
		Sales	5 4 3 2 6 1
		Advertising	3 4 2 1 6 5
		Product quality	3 5 4 1 6 2

SOURCE: Results of team's decision, Indiana University Executive Decision Game.

also of some importance. If too short a period is allowed for making the decisions, they cannot be made rationally, and the situation may deteriorate into a guessing game. On the other hand, some time pressure should be exerted to maintain the interest of the group, to force each team to develop efficient procedures and to utilize the abilities of each of its members, as well as to conserve the time of everyone involved. It is obvious that the optimum time allotted to making the decisions for each period depends on the number and complexity of the decisions involved. For the game just described, 12 to 15 minutes for each period seems to be adequate.

To prevent participants from adopting unrealistic policies in anticipation of the termination of the game, they should not be told exactly when the game will end. At least five years of simulated decisions appears to be desirable in order to obtain the full benefits of the experience. At the rate of one year per hour, this means that five hours are required for the simulation run. Our experience indicates that this should be spread over two or

more shorter sessions, with sufficient time between them for the participants to assimilate the lessons learned in one session before beginning the next session.

### Evaluation Sessions

Perhaps the most important part of the entire experience is the evaluation session after the simulation run is completed. The performance of the entire industry is discussed, and each team is required to present its objectives and policies and to justify and explain its decisions and results. During the game, to prepare for this presentation, each team should keep a running log of its objectives, policies, and decisions, along with a chart recording its sales, capacity, production, inventory, advertising and research and development budgets, profit after taxes, and price and labor rate. These charts or some equivalent presentation of the information they contain are of great value to the teams in making intelligent decisions.

It is during this evaluation session that the full picture of what caused the results obtained first becomes apparent, for each team's deci-

sions affect the results obtained by its competitors as well as its own results. In like manner, the mistakes made by each team are usually quite apparent, and the entire group can profit by them. Although the instructor usually does not have to do anything but moderate this discussion, his skill in directing it into useful channels and in summarizing the lessons learned is of great importance.

#### EXPERIENCE IN USE

We at Indiana University have successfully utilized the game described at all levels in our School of Business program. Ten members of our faculty have used it in their courses. About one-third of the participants rated the simulation as the top educational experience, time considered, that they ever had; the average rating for the entire group, on a 10-point scale ranging from worthless to best, was 8.66.

One of the most striking aspects of the simulation technique is its dynamic character. The participants can see and evaluate the results of their decisions and learn through pseudo experience. It is said that experience is the best teacher; however, experience is inefficient because so much of it is trivial and not pertinent to the major concepts with which management is concerned. Perhaps pseudo experience, focused through the simulation technique on matters of fundamental importance, is actually superior to experience as a teacher.

The advantages of participating in a management decision game vary from individual to individual and from one situation to another. It appears that mistakes are a better teacher than successes, which implies that the participants are likely to learn the most in their weakest areas. Furthermore, the technique, and even the same game, may be profitably utilized repeatedly, for as the gross mistakes are eliminated through the experience process, competition becomes much more intense, and the more subtle considerations become of paramount importance.

#### *Managerial Decision-Making*

A manager is continually faced with decisions in which he must choose a course of action

without certain knowledge of the outcome of each course of action. He can only estimate, using whatever tools he has available, the outcome of each course of action and choose the most desirable from among these. This is often complicated by the fact that the result of a choice also depends on the action of a competitor, so that uncertainty is a fundamental characteristic of management decision-making. Another aspect of many decisions is their sequential nature—the same decision must be faced again tomorrow, or next week, or next month.

Although we do not have an adequate theory of how such decisions should be made, management decision gaming provides a laboratory in which the student can sharpen his skills in this type of decision-making and obtain valuable experience without exposing himself to the excessive penalties associated with experimentation in the real world. At the very least, the student is forced to grapple with the problems involved in sequential decision-making under uncertainty.

The importance of well-defined objectives, rational and flexible policies, and the role of planning in management decision-making are also clearly illustrated by the use of the management decision game. The effects of lack of proper attention to these principles are quite obvious, especially in the evaluation session, when the charts showing the performance of the various firms are compared. The uncertainties associated with decision-making, especially those associated with actions of competitors, emphasize the importance of flexible policies and of analyzing historical information to establish relationships that can be used for predicting the effects of current decisions.

#### *Team Attitudes*

To be successful in obtaining its objectives, each team must devise a strategy in which the various decisions are interrelated in a logical manner. For example, if a team decides to obtain profits by means of high volume sales at a modest price, it must also provide the plant capacity to produce these goods, and be concerned with the financial aspects of this expansion of capacity. Relationships between



price, advertising, product quality, production, sales, inventory, and profits must be considered and reconsidered as the simulation proceeds. The decisions involved in this game must reflect compromises among the viewpoints of finance, marketing, human relations, production, and so forth. The surest way to be unsuccessful is to concentrate attention on only one aspect of the situation, forgetting all about the others involved. This aspect of the technique was vividly illustrated when three of six teams went bankrupt in an undergraduate marketing class.

Thus, although the advanced student may not learn anything specific about the individual areas of business, he may nevertheless profit greatly from business decision gaming. He is forced to actively integrate knowledge of many areas into a framework so that their interrelationships become truly meaningful for the first time. There is an important difference between the ability to describe these relationships verbally and the ability to apply this understanding to decision problems.

Each team must solve problems associated with organizing a group of individuals to accomplish a complex task under time pressure. It is enlightening to observe the effectiveness of the groups in organizing themselves into a smoothly functioning team. Some groups operate like clock-work, while others may divide into opinion blocks that alternately gain control, with consequent management ineffectiveness and occasionally some bitterness.

The participants are frequently impressed with the importance of interpersonal relationships in group decision-making. A member of a team may come to the realization that his ideas are not being accepted by the group and thus be forced to consider how he personally can become more effective. On the other hand, a group will occasionally find that the decisions made by a dominant member are inadequate, and come to realize that there are times when a dominant personality must not be allowed to exert an overpowering influence.

One of the more important effects of participation in a simulation exercise may be its influence on the player's attitude toward the concept of a mathematical model. Many parti-

cipants, never having had any association with anything but the simplest mathematical techniques, are amazed at the complexities that can be incorporated into a model that, to the mathematician, is extremely unsophisticated. The participants' attitudes toward the feasibility of advanced management science techniques may be significantly altered as a result.

### EFFECT ON TEACHING

Perhaps the most important result of use of the management gaming technique should be its effect on the faculty members involved. Two aspects involved here are (1) the development of a game simulation, and (2) teaching the students how to play the game.

To develop a game, it is first necessary to decide what you are trying to teach. The development of the mathematical model involved in the refereeing process requires that the important decisions be separated from the immaterial ones, after which the relationships between these decisions and the results obtained must be formalized and quantified. For example, it is not sufficient to be able to announce piously that advertising boosts sales—a relationship between the advertising of the firms in the industry (expressed in dollars, minutes of radio time, lines of newspaper space, or some other well-defined measure) and their sales must be expressed in concrete form. Although the relationships used in the simulation may be quite hypothetical, the creator of the simulation is forced to explicitly consider them. His personal interest must therefore be focused on the fundamental questions associated with a discipline, so that in his own research he is not so likely to dissipate his energy by attacking semitrivial problems.

The second question that faces the instructor—how to coach students to play—also raises some fundamental problems. It has been verified by observation that experienced executives will do better than undergraduate students, and that students with experience in the game will usually beat those who are participating for the first time. But this still does not answer the question, "*How should the decisions best be made?*" This question should

stimulate the teacher, for if the instructor doesn't know, who should?

#### VARIED USES

One of the most interesting ideas that has arisen in connection with management gaming is the possibility of using this technique for measuring management aptitudes and abilities that are difficult to measure by means of our present testing techniques. This question assumes great importance if you accept the conclusion of Leavitt and Whisler and assume that in the future middle-management performance may not be an adequate indication of top-management capabilities. Then it may become quite desirable to use simulation to select and prepare men for top-management positions.

At the present state of the art, there are many apparent difficulties involved in the use of gaming for evaluation or as a method of testing. For example, how might we separate the performance of an individual from that of a team? Also, how can an absolute measure of ability be determined in a situation where the performance of one team is so dependent on the quality of its competitors? In a game where the general level of competence is low, a team might make a killing; against tough competition, that same team might garner considerably less profit or even suffer substantial losses. Despite the difficulties involved, it is quite likely that simulation exercises will eventually be used for evaluation and testing.

#### LIMITATIONS

Despite all the advantages, there are some obvious limitations associated with the use of the simulation technique. One of these is cost—whether the simulation is refereed by humans or by a computer, the cost of a simulation session is by no means insignificant. For efficient operation, the simulation previously described requires a computer operator and two runners in addition to a computer costing about \$35 an hour. Furthermore, each of the teams involved should be located in a separate room with blackboards and charts provided for their use. Assuming approximately 20 players

are involved, total cost per participant probably averages between \$8 and \$12 per run.

There is some tendency for the participants to try to win the game by approaching the simulation as a game rather than as a realistic business situation. Although this may be a handicap in the area of motivation, it is quite possible that the techniques of decision-making under uncertainty may be independent of the realism of the situation involved. However, we have found that, for one reason or another, about 5 per cent of the participants have been unable to effectively enter into the experience and, therefore, have not profited significantly from it.

One of the most significant limitations of the simulation technique may be the lack of qualitative influences on the effectiveness of the decisions. For example, the effect of a dollar spent on advertising, at a given level, is the same for each team, while in actual practice it may be that the skill with which the money is spent is the controlling factor. To the extent that decisions in themselves are unimportant when contrasted with the skill involved in carrying them out, simulation is likely to create a false impression, for most of the qualitative considerations and the effects of the morale and quality of personnel in the organization are eliminated.

A tendency to eliminate or formalize the possibility of innovation is another limitation of the business gaming technique. Whenever formal rules are imposed, any innovation is likely to be against the rules unless it was anticipated in the design of the game. However, some military war games are so loosely structured that the umpires essentially make up the rules as they go along. This type of framework might allow innovation to be realistically handled.

It should be noted that these limitations are simply an admission that simulation is not perfect—that it cannot be used to teach every concept associated with business administration. But perhaps a more fundamental limitation of these simulation techniques is that, while it obviously produces quite an impact upon the participants, we are not sure what it is that they are learning. It is possible that the

decision variables specified, the relationships involved in the mathematical model, and/or the feedback information returned to the participants may be subtly biased to such an extent that the student learns principles that are invalid. They may, for example, learn that advertising is more effective than research and development, that management should always give in to the demands of labor, or that every company should have an electronic computer—things that the instructor does not know he is teaching and over which he has no control. The fact that the student is teaching himself and is much less inclined to question the accuracy of his conclusions, combined with the crudity of the models presently employed and our lack of understanding of what is being taught, present the dangerous although rather unlikely possibility of doing more harm than good. There is no doubt that the simulation technique is a powerful teaching device, and therefore is potentially dangerous unless we are relatively sure of what is being taught.

#### VARIATIONS

##### *Total-Enterprise Game*

The Indiana University Executive Decision Game is an example of a total-enterprise game, the outcome of which is completely determined by the decisions made. It is a top-management game in the sense that the gross decisions involved would have to be broken down into many subsidiary decisions by lower levels of management in an actual organization. Although this completely determined, top-management, total-enterprise game is typical of those most frequently used, there are many other types of simulations in use.

##### *Inventory-Control Simulation*

Several specialized simulations have been developed for use in specific subject areas. A number of fairly simple inventory-control simulations are being utilized to stimulate interest in the problems associated with inventory management. In one such exercise, the student is provided with inventory carrying costs, a shortage cost, an ordering cost, and

a delivery lead time. He then simulates experience by drawing weekly orders from a deck of cards, which represents a typical ordering pattern, thus obtaining hypothetical practice in the management of an inventory. By keeping track of his total inventory costs associated with the use of various inventory decision rules as guides to management, the student is able to compare the effects of various policies.<sup>5</sup> Several simple but effective simulation exercises have been devised by Allen J. Rowe of General Electric<sup>6</sup> for use in teaching concepts associated with the various levels of scheduling in the intermittent production case.<sup>7</sup>

##### *Monte Carlo Technique*

There are no insurmountable difficulties associated with introducing the effects of uncertainty into the simulation models by utilizing a Monte Carlo technique or by throwing dice, cutting cards, or spinning wheels. Thus, the apparently random effects of decisions involving such things as advertising budget, research and development budget, or sales effort associated with a given customer can be effectively simulated. At least one of the more popular total enterprise games<sup>8</sup> substitutes a simple Monte Carlo model for the computational complexities of a completely determined model, thus eliminating the use of a computer for refereeing this game.

<sup>5</sup> The idea for this game was obtained in a conversation with Professor Jackson of UCLA concerning a similar game that he had developed. As frequently happens, I, as an instructor, learned much more about the problems of inventory control and the building of inventory models than did any of my students. It was an extremely stimulating experience to try to devise the best general rule for the situation posed by this simple game.

<sup>6</sup> These include "Uniflow," a production leveling simulation exercise; "Simuload," a master scheduling and loading game; and "Dispatch-O," a game designed to illustrate problems associated with releasing and sequencing work to the factory floor. Professor R. Stansbury Stockton of the Indiana University School of Business Management Department has developed an exercise similar to "Dispatch-O" that he has used quite effectively in Production Management courses.

<sup>7</sup> None of these examples are games in the technical sense, for the only competition involved among players is strictly on a performance basis—one team's actions do not influence another team's results.

<sup>8</sup> See G. R. Andlinger, "Business Games—Play One!" *Harvard Business Review*, XXXVI (March-April, 1958), 115-25.



## HOW MUCH REALISM?

However, it is possible that too much realism in introducing uncertainty may tend to detract from the value of the simulation experience by obscuring the relationships between the variables involved, making it almost impossible for the participants to detect these relationships. A very important question, the answer to which is in doubt at the present, is "*How much realism is desirable?*" It is apparent that there is a conflict between the attainment of realism and the teaching advantages associated with abstraction.

*Specialization*

Obviously, it is possible to magnify the decisions involved in a total enterprise game in one specific area, such as marketing, finance, production, or economic analysis, as well as to specialize such a game by eliminating decisions that are not pertinent to the particular area under consideration. Also, the simulation may be designed to represent a specific industry, such as the oil industry, the home appliance industry, the Air Force supply system, or the local supermarket. Thus, it is possible not only to utilize the simulation technique as an integrating device over the entire enterprise but also to adapt it to the subject matter of many specialized courses, with the option of either forcing the participants to integrate the specialized knowledge into a general framework or allowing them to concentrate their attention on the specialized area alone.

*Complex Models*

Furthermore, the model of a total-enterprise simulation may be increased in complexity by introducing several products, alternative investment possibilities, and stratified markets, at the same time magnifying the various decision areas to include the many lower-level decisions that are necessary for realistic operation.<sup>9</sup> While the decisions in such a simulation obviously could not be made in a 15-minute

<sup>9</sup> Such a game is now under development at Carnegie Institute of Technology for use in the Graduate School of Industrial Management.

period, such a simulation may provide a realistic and stimulating framework on which an entire management training program could be based. While there may be some question concerning the desirability of such a large, complex simulation, as opposed to a variety of simpler exercises designed to be utilized in the individual course areas, there is no doubt that the development of such an ambitious game is an extremely challenging experience for those involved in the project, and is of great value on these grounds alone.

*Computer Use*

The question of whether or not a computer is necessary for effective simulation has generated heated discussion. Although computers are costly devices and are often inconvenient to obtain at the time and place desirable from the educational standpoint, there is no doubt that in many situations the capabilities of a high-speed computer are essential for the utilization of a suitably realistic model. Sometimes they are a distinct convenience because they may eliminate the training and administrative effort involved in complex clerical operations. It seems likely that computers will be used extensively in situations where they are desirable and available, while at the same time manual refereeing will be used where it is adequate and convenient.

## CONCLUSIONS

By changing the emphasis of the preparation and the evaluation session, it is possible to use a single simulation, repeated several times, to teach different and relatively unrelated subject matters. For example, the top-management decision game could be used in the study of principles of decision-making, interpersonal relationships, or analysis of financial data. By varying the parameters of the mathematical model, microeconomic analysis could be practiced. However, at this stage in the development, much work remains to be done to determine how to set the stage effectively so as to focus the experience on the desired subject matter areas and integrate the game most effectively into a course.

Strange as it may appear, many of the games now in use were developed by men whose major interest lies in the area of construction of games rather than in the subject areas in which they are being used. They develop games because they enjoy the peculiar challenge of this activity. However, this approach is not likely to produce games that are focused on the objectives of a particular course. It seems highly desirable that more attention be devoted to the development of specific simulations designed for use in a specific course. Although the design of a simulation can be a time-consuming and difficult process, it is also a thought-provoking one. In addition to the obvious advantage of focusing the simulation experience directly on the subject matter of the course, the effect on the instructor of designing his own simulation model could be of even greater importance.

### *Benefits*

As a matter of fact, I believe that the most important benefit associated with this technique will be its effect on a school of business faculty as its members concentrate on the design and use of simulation models. This introduces the concept of a mathematical model to a group that may be traditionally skeptical of and unfamiliar with quantitative techniques. In order to design a simulation, it is necessary first to concentrate attention on the question, "What am I trying to teach?" Since courses tend to proliferate like weeds, this re-examination of fundamental objectives may be of utmost importance. Second, the development of simulation models focuses attention on the fundamental interrelationships among the factors involved in business management. The development of simulation models may lead to a higher concept of integration as we develop a better understanding of these basic relationships.

### *Weaknesses*

One of the more apparent weaknesses in our present knowledge of simulation is our uncertainty concerning exactly what we are teaching through this technique. Much work needs

to be done in the area of measurement of the effects of simulation experience on the attitudes and the knowledge of the participants. Until such work is done, there will be much uncertainty concerning the advantageous or undesirable impact of simulation as a teaching technique.

Simulation is neither a cure-all nor a lazy man's solution to all his problems. Unfortunately, there is a tendency to use a management game as a novelty without any specific purpose in mind except that the students enjoy the experience. It is not easy for an instructor to acquire an understanding of the game being used or to decide how to use it most effectively. It is difficult to design a simulation for a particular purpose or to adapt an existing game to a new use. In my opinion, however, unless this technique is used carefully and thoughtfully, its novelty will soon wear off, and it will have little influence on our educational programs.

### *Values*

On the other hand, those who are willing to devote their minds and energies to the fundamental problems associated with the use of management gaming in specific courses are likely to find the technique of increasingly great value. There appears to be nothing yet devised that can compete with simulation as a motivational influence on the student, and the surface has barely been scratched in the development of specific simulation techniques for the various subject matter areas. Potentially, simulation can become a pillar for management education by providing a laboratory in which principles can be discovered and illustrated. If we do not succumb to the temptation to be satisfied with its superficial novelty value, it is quite possible that management decision gaming will achieve a place in schools of business comparable to the moot court in the schools of law.

*The use of simulation in research will be the subject of an article in a future issue of BUSINESS HORIZONS.*

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## **TECHNOLOGICAL HORIZONS**

### **NEW SOURCES OF ENERGY**

*by David D. Martin*

THERE IS good reason to believe that within a few years we may have new, cheaper sources of power produced by relatively small devices that will revolutionize the way in which we heat our buildings and power our automobiles and household appliances. A large part of the present cost of supplying electrical energy to the American home arises, directly or indirectly, from the fact that power originates from a generator located some distance away from the customer. This is done, of course, because of the economies of producing electricity on a scale much larger than necessary to supply the requirements of a single customer.

One or another of the new developments in the conversion of energy to electrical form may possibly yield a new device, the optimum scale of which is small enough to enable each consumer to produce his own supply of electricity on the premises, thus eliminating the costly transmission function and the unsightly poles and wires that clutter the view from our picture windows. A small source of a sufficient quantity of electrical energy could also make possible a return to the use of electric motors to power automobiles—a development that would, among other things, contribute to the solution of the smog problems of our cities.

### **TRADITIONAL SOURCES**

IN THE past, electrical energy has been produced either by the conversion of chemical



energy directly to electrical form with batteries, or by the conversion of mechanical energy to electricity with the dynamo. In a battery, the flow of electrons that accompanies a chemical reaction among the anode, cathode, and electrolyte is made to pass through whatever device is being powered. In the dynamo, rotary motion from some external source is used to induce electromagnetically a flow of electrons.

The batteries we have used in the past have generally been of one of two types: a primary battery that is discarded after sufficient electrical energy can no longer be obtained; or a secondary battery that is reversible. In a secondary battery, the chemicals can be restored to their original state and the battery can be reused by applying an electrical current in the reverse direction.

In the generation of electricity with a dynamo, the necessary mechanical energy may come from a turbine powered by falling water, from an internal combustion engine, or from a steam engine. The last is the most important present source of electricity. The heat obtained from burning some carbonaceous material under a boiler produces steam, which expands and turns a turbine connected with the dynamo. In this process there is an inherent limitation on the proportion of the chemical energy that can be converted to electricity. Steam plants ordinarily achieve only about 33 per cent efficiency, and the maximum feasible is probably on the order of 45 per cent.<sup>1</sup> This limitation does not exist in the direct conversion of chemical energy to electricity in the cells of a

battery, but the high weight, volume, and cost of batteries per unit of electric current has heretofore made them competitive with steam or hydroelectric generation only in special uses requiring relatively small amounts of current.

Many of the recent developments involve improvements in the existing sources of energy. Both primary and secondary batteries are being improved by changes in the materials used in the chemical reactions. For example, the zinc-mercuric oxide dry cell has a much longer life and a more constant voltage than the traditional zinc-manganese flashlight dry cell. The cost of mercuric oxide as compared to manganese dioxide is so high, however, that, for most uses, the mercury battery has not been substituted. Nevertheless, several new types of magnesium cells are now in the development stage, and may soon become of commercial significance. These batteries will have many of the advantages of the mercury cell, but they will use a much cheaper basic material.

Primary batteries using indium have recently been introduced. These are similar to the mercury batteries except that indium is used in place of zinc for the anode. The advantage comes from the lessening of corrosion to which zinc is subject. With less corrosion, there is less liberation of gas, so it is possible for the battery to be hermetically sealed. The indium battery is now being used in electric watches.

Improvements are also being made in secondary batteries. The lead-acid type generally used in automobiles has been improved and, in addition, other materials are being used. The nickel-cadmium type of storage battery has been available for a long

time, but its cost has been too high for it to replace the lead-acid type in most uses. Among the recent new types of secondary batteries are those using lead and silver oxide, cadmium and mercuric oxide, zinc and nickel dioxide, and iron and silver oxide. But none of these seems likely to result in radical changes in our pattern of supplying electricity requirements.

## NUCLEAR BATTERIES

THE USE of atomic power to generate electricity is, of course, already a reality. So far, atomic energy has been used simply as a substitute for the burning of carbonaceous material as the source of heat in the heat-steam-rotary motion cycle of the dynamo. This process offers little possibility of radically changing either the cost or the scale of electricity production. Other ways of obtaining electricity from nuclear energy, however, may soon be available; scientists are experimenting with several types of nuclear batteries.

A direct charging device, in which electrons from a radioactive material are collected, is already commercially available. High voltages are possible, given enough time for the charge to build up, but this type of nuclear battery has the disadvantage of very low current and high impedance. Another new development in nuclear batteries is the "contact potential difference" type. A gas such as argon is enclosed between two electrodes of dissimilar metals. Radiation of any kind with sufficient energy to ionize the gas will produce a flow of ions in one direction and electrons in the other direction between the two pieces of metal. Unlike the direct charging de-

<sup>1</sup> Norman Lansdell, *The Atom and the Energy Revolution* (New York: Philosophical Library, Inc., 1958), p. 39.

vice, the current is multiplied about 100 times.<sup>2</sup>

Experiments are also being made with a nuclear battery utilizing the radiation of beta or gamma particles from some isotope, together with a semiconductor junction. In this device, the current may be multiplied several hundred thousand times. Radiation damage to the silicon crystals is the chief disadvantage of this type of cell.

The principle of the thermocouple is used in another nuclear battery. The radioactive decay of polonium 210 results in heat that is used to maintain a temperature differential between a hot and cold junction of a thermocouple. The disadvantages of this type are that polonium 210 has a half life of only 138 days and is very expensive.

The Atomic Energy Commission recently announced successful experimentation with a plasma type thermocouple using heat from a reactor. This development appears to offer a means of converting the energy released in the nuclear fission process to electricity without using a steam turbine and dynamo.

In the photovoltaic battery, radioactive energy is converted to photons by scintillating media that are utilized to eject electrons from a prepared surface. The electrons can flow through an external load on the way to a collecting electrode. One such experimental battery uses promethium 147, which is a relatively abundant fission product. Using four and a half curies of promethium 147, this battery will supply 20 microwatts of electricity

when new, with the wattage being cut in half every two and a half years.

Of these nuclear batteries, only the new plasma type thermocouple appears to offer an economical alternative to steam-generated electricity, but the others may find a place in special uses requiring small amounts of current, long life, and tolerance of extreme temperature conditions.

### SOLAR BATTERIES

THE CONVERSION of sunlight to electricity has been possible for many years with the photoelectric cell. Some of the recent developments in this field are closely related to nuclear batteries. Both selenium and silicon photovoltaic cells are already commercially available. The silicon type operates with more than 10 per cent efficiency in full sunlight. Radiant energy from the sun striking a p-n type junction of silicon semiconductors creates a potential difference that can be used to supply an electric current. This is the type of solar battery used in some of our satellites.<sup>3</sup>

Perhaps at some time in the future we will be able to roof our houses with such cells, connected together in parallel and in series so as to supply the necessary voltage and current for our household needs for electricity. Several big obstacles would have to be overcome, however, to make this dream come true. In the first place, the solar battery operates only when there is sunlight, so some way must be found to store power during the daylight hours for use at night and on cloudy

days. This would require a considerable reduction in the cost of storage batteries. In addition, the problem of the high cost of materials must be overcome. For the present, at least, it appears that solar batteries will be used only for supplying low power requirements.

### NUCLEAR FUSION

PROBABLY the most important area of research in new sources of electricity is the attempt to master thermonuclear power—that is, the hydrogen bomb. Nuclear fusion has several advantages over fission as a new source of electricity. A fusion power plant would present a much smaller problem of radioactivity. In addition, heavy hydrogen, the basic material used in the fusion process, is much more plentiful and cheaper than the uranium used in the fission process. It may become possible to release as much energy from the heavy hydrogen in a gallon of ordinary water as we now obtain from 350 gallons of gasoline.<sup>4</sup>

To harness this practically unlimited source of power economically will require controlled fusion reactions and some new means of converting the released heat to electricity. In the fusion reaction, two nuclei of heavy hydrogen are caused to collide at very high speed, producing helium and releasing energy. Such reactions take place in the sun and other stars, and a very high temperature is required. However, the energy required to produce the reaction is small relative

<sup>2</sup> "Small-Scale Unconventional Power Sources Now Assume New Significance," *General Electric Review*, LXI (July, 1958), 30-33.

<sup>3</sup> C. K. Morehouse, R. Glicksman, and G. S. Lozier, "Batteries," *Proceedings of the Institute of Radio Engineers* (August, 1958), pp. 1462-83.

<sup>4</sup> Henry Hurwitz, Jr., "The Problems of Mastering Thermonuclear Power," *General Electric Review*, LXI (July, 1958), 18-23.

to the energy released. In the hydrogen bomb, the high temperature is achieved by exploding an atomic bomb. To achieve the high temperature in a controlled reaction that is self-sustaining is the big problem, since terrestrial materials cannot contain materials at such temperatures. However, if the material is in the form of an ionized gas, it may possibly be effectively contained by magnetism. Such a "magnetic bottle" would require only a part of the electricity produced.

It is too early to say what the most economic scale of a thermonuclear power plant is likely to be, but developments in this area may eventually result in changes as radical as those brought about by the dynamo.

### THE FUEL CELL

THE FUEL CELL is a development that may have significant effects on electric energy production in the very near future. This new device is neither a primary nor a secondary battery, although it converts chemical energy directly into electricity. It differs from other chemical batteries in that the chemicals are replenished as the electron flow takes place between the anode and cathode. There is no recharging as in the secondary battery, but instead a renewing of life through replacement of the materials used. In recent years, two promising types of fuel systems have been investigated. One uses carbon and the other hydrogen as the fuel.

An ordinary steam-generating power plant indirectly converts the chemical energy in a carbonaceous fuel to electricity. The burning of the fuel constitutes a chemical reaction between carbon and oxygen. But the reaction

between carbon and oxygen involves a flow of electrons that is used directly in the fuel cell. One such carbon-oxygen cell is reported to operate with a conversion efficiency of about 75 per cent. A fuel cell using hydrogen has been reported to have an operating potential from a half to about one volt with a power output of 6,000 watts per cubic foot of cell volume. This type of battery might be used to firm up the power from hydroelectric plants, since the hydrogen could be produced from water during off-peak periods.<sup>5</sup>

Since the fuel cell can give a fairly large amount of power relative to its size and weight, and since it uses relatively cheap fuel, it seems to be the new development most likely to provide a

<sup>5</sup> Morehouse, Glicksman, and Lozier, "Batteries," p. 1474.

small-package source of power in the quantities needed for household purposes. If future developments sufficiently increase the power-to-weight ratio, it may also bring back the electric automobile, which was abandoned in the early years of this century primarily because of the tremendous weight of the batteries required.

Many other research projects are now under way to obtain electricity from new sources. Some involve the conversion of heat to electricity without using the steam turbine. Others involve the conversion of mechanical energy to electricity other than by using the electromagnetic principle of the dynamo. From at least some of these many current developments we can confidently expect to see important innovations in the years ahead.

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## book notes and reviews

*Son of man, can these bones live?* (Vision of Ezekiel)

*I am illiterate and so can understand nothing about life.* (Syrian hairdresser in *The Passing of Traditional Society*)

### COMING SOCIAL FUSION: GERMANICUS

#### AND THE OPENING OF THE THIRD EYE

##### *Part I, The "New World-View"*

IN A RECENT issue of *Saturday Review* there was a cartoon of two men seated in an airliner, a blond Westerner engrossed in a book titled *Zen Buddhism* and an Oriental equally engrossed in a magazine called *Industrial Age*. This is a graphic representation of our present age—one of transition for both West and East—which is the subject of Peter Drucker's new book, **LANDMARKS OF TOMORROW** (Harper). In Drucker's own words, "This book is a report on the new post-modern today we live in—nothing more. It does not deal with the future." (p. x) Nevertheless, it ranges over a tremendous expanse of the contemporary scene, examining the "new world-view" or "new perception of order," the educational revolution, the "new organization," the drive for world-wide economic development, nation-state government, the collapse of Eastern civilization or tradition, and the new concern with values and metaphysics.

Drucker's consideration of

these crucial issues (some of which are also covered by the much-discussed new book by Barbara Ward, *Five Ideas That Change the World*, Norton) is timely, but is also in grave danger of being misinterpreted. Some of the better parts of the book seem vague (at worst nonsensical, at best unsubstantiated) and most evaluation will probably be focused on the poorer sections (for example, discussions of education and the "new conservatism") simply because they are the clearest, if not always internally consistent.

In spite of some weaknesses, Drucker's book is quite stimulating and often extremely perceptive. He has accomplished his expressed intention—a sighting of "landmarks"—and in the process has included discussion of some of the most controversial subjects of the day.

Because these subjects appear in unusual variety and volume in recent publishing, we are suggesting parallel reading in new books as we discuss each one. In

this issue we are concentrating on the fulcrum of the book—Drucker's concept of the "new world-view" and its implications for the "new organization."

There is a strong motive for emphasizing the revolution in science, which constitutes this new world-view—the need of a *rapprochement* between the manager and the scientist in the new organization. If the crux of this problem is increased knowledge of power and creativity, the scientist needs to learn more about the former, and the manager about the latter.

In the next issue, we shall shift to Drucker's consideration of the drive for world-wide economic development, the collapse of the traditional East, and the general human situation, as Drucker calls it. It is in connection with these subjects that we will glance at some new reading in existentialism and Zen Buddhism, both of which are natural concomitants of the new world-view.

Any world-view or concept of "the way things are"—or *Weltanschauung*, to use the good old German term—is, of course, the outgrowth of the questions we ask, not of the answers. It is basically our way of thinking about the phenomena of our world and society, now changing drastically for the first time in three hundred years; and it is this change that Drucker is describing.

We are abandoning the world-thinking initiated by Descartes, says Drucker, and replacing it with one as yet not fully understood (and according to some, *ununderstandable* in any fundamental sense). He describes the old Cartesian world-view as based upon two formulations: (1) the definition of science as "The certain and evident knowledge of things by their causes," which, he says is translatable as

"The whole is the result of its parts"; and (2) "the assumption of analytical geometry," or "I know what I can measure." (p. 3)

In Drucker's terms, these outmoded formulations are bowing out to "pattern," "purpose," and "process." That is, cause and effect relationships are relinquished for configuration and purpose. And analysis of static, isolable phenomena is being abandoned for the search for dynamic principles.

Despite the refutation of Hume, says Drucker, the concept of causality has only within this century been effectively challenged by that of configuration. "The central concepts in every one of

our modern disciplines, sciences and arts are patterns and configurations." (p. 4) Similarly, it is now largely conceded that not only is the whole not the result of its parts, but "not identifiable, knowable, measurable, predictable, effective or meaningful through identifying, knowing, measuring, predicting, moving or understanding the parts." (p. 4) This challenge to causality results (how our language serves and preserves the old logic!) largely from studying systems more complicated than essentially mechanical ones—systems such as those in biology and the social sciences in general, although the challenge has recently been echoed in the

"purest" sciences of physics and mathematics.

Drucker seems in his exposition of "purpose" to have ignored or at least minimized a whole area of modern scientific thinking. He states that the decline in the acceptance of any causal concept does not mean a turn to randomness or chance. This certainly seems to ignore the whole area of probability theory (we will talk about this more fully when we refer to Norbert Wiener's views in *The Human Use of Human Beings*). It is true that, for a large number of scientists, the ultimate implications of probability theory are unacceptable. For example, Drucker states

## PEOPLE WILL BE TALKING ABOUT

### EARLY SPRING

- Curtis Bok, *STAR WORMWOOD* (Knopf)  
 Albert Camus, *MYTH OF SISYPHUS AND OTHER ESSAYS* (Vintage)  
 C. Y. Lee, *THE SAWBWA AND HIS SECRETARY* (Author of "The Flower Drum Song," Farrar)  
 Aubrey Menen, *THE FIG TREE* (Scribner)  
 Claude Simon, *THE WIND* (Brazilier)  
 Adlai E. Stevenson, *FRIENDLY ENEMIES: WHAT I LEARNED IN RUSSIA* (Harper)  
 Mark Van Doren, *THE LAST DAYS OF LINCOLN* (Hill and Wang)  
 Ernst Wiechert, *TIDINGS* (Macmillan)

### LATE SPRING

- Jacques Barzun, *THE HOUSE OF INTELLIGENCE* (Harper)  
 Myra Buttle, *TOYNBEE IN ELYSIUM* (Sagamore)  
 Martin Caidin, *SPACEPORT, U.S.A.: THE STORY OF CAPE CANAVERAL AND THE AIR FORCE MISSILE TEST CENTER* (Dutton)  
 Earl Conrad, *THE GOVERNOR AND HIS LADY* (Story of the William H. Sowards, Putnam)

Kent Cooper, *KENT COOPER AND THE ASSOCIATED PRESS: AN AUTOBIOGRAPHY* (Random)

Ralph Cusack, *CADENZA* (Houghton)

Robert Dahl, *BREAKDOWN* (Bobbs)

T. S. Eliot, *THE ELDER STATESMAN* (Farrar)

Leonard Falkner, *FORCE OF LIBERTY: THE DRAMATIC OPENING OF THE AMERICAN REVOLUTION* (Dutton)

Jean Giono, *STRAW MAN* (Knopf)

Herbert Gold, *THE OPTIMIST* (Little, Brown)

Gen. George C. Kenney, *THE SAGA OF PAPPY GUNN* (Duell)

Jack Kerouac, *DOCTOR SAX* (Grove)

Lawrence Lipton, *THE HOLY BARBARIANS* (Sociological study of beatniks, Messner)

Robert Lowell, *LIFE STUDIES* (Farrar)

Roland Penrose, *PICASSO: HIS LIFE AND WORK* (Harper)

Ezra Pound, *THRONES: 96-109 DE LOS CANTARES* (New Directions)

Mary Renault, *THE CHARIOTEER* (Author of "The King Must Die," Pantheon)

Kenneth Rexroth, *BIRD IN THE BUSH, OBVIOUS ESSAYS* (New Directions)

George Waller, *KIDNAP: THE STORY OF THE LINDBERGH CASE* (Dial)

Edmund Wilson, *APOLOGY TO THE IROQUOIS* (Farrar)

### SUMMER

Hugh Baillie, *HIGH TENSION: THE RECOLLECTIONS OF HUGH BAILLIE* (Ex-President of UP; Harper)

Eric deBisschop, *TAHITI NUI* (Challenges most of the theories of Thor Heyerdahl; McDowell)

Charles de Gaulle, *THE EDGE OF THE SWORD* (Criterion)

Allen Drury, *ADVISE AND CONSENT* (About U.S. Senate, Doubleday)

Paul Gallico, *LUDMILLA* (Doubleday)

Harry Golden, *FOR 2¢ PLAIN* (Author of "Only in America," World)

James Hogg, *THE PRIVATE MEMOIRS AND CONFESSIONS OF A JUSTIFIED SINNER* (Grove)

Martin Kramer, *SONS OF THE FATHERS* (Macmillan)

Richard Mason, *THE FEVER TREE* (Author of "The World of Suzie Wong," World)

François Mauriac, *QUESTIONS OF PRECEDENCE* (Farrar)

Walter M. Miller, Jr., *A CANTICLE FOR LEIBOWITZ* (Lippincott)

Elizabeth Shepley Sergeant, *ROBERT FROST: THE TRIAL BY EXISTENCE* (Holt)

Ira Wallach, *MUSCLE BEACH* (Little, Brown)

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*Cornelius Beukenkamp, Jr.*, FORTUNATE STRANGERS: AN EXPERIENCE IN GROUP PSYCHOTHERAPY (Grove)  
*Horace Mann Bond*, THE SEARCH FOR TALENT (Harvard)  
*Edward C. Bursk*, BUSINESS AND RELIGION: A NEW DEPTH DIMENSION IN MANAGEMENT (Harper)  
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*John Chamberlain*, ROOTS OF CAPITALISM (Van Nostrand)  
*William E. Clement*, WINSTON CHURCHILL'S ANTI-DEPRESSION PROPOSAL ("To halt inflation, stabilize prosperity and insure full freedom"; Pub. Rev. Ed. Council)  
*Coppock*, ECONOMICS OF THE BUSINESS FIRM: ECONOMICS OF DECISION MAKING IN THE BUSINESS ENTERPRISE (McGraw)  
*Harold W. Davey, Howard S. Kaltenborn, and Stanley H. Rottenberg* (eds.), NEW DIMENSIONS IN COLLECTIVE BARGAINING (Harper)  
*Deutsch and Shea, Inc.*, COMPANY CLIMATE AND CREATIVITY (Technical Manpower Consultants, Indus. Rel. News)  
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*Sidney Jefferson*, HANDBOOK OF THE ATOMIC ENERGY INDUSTRY (Pitman)  
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that Einstein said that he could not accept the view that the Lord plays dice with the universe. Many scientists, further, believe that, without a deep intuitive insistence on an essential order and harmony in the universe, there would be no "moments of discovery" in science. For them the scientific insight, the inspiration of genius, the "sudden flash of lightning," as Gauss called it, is at bottom aesthetic—a perceptive drawing of order from disorder.

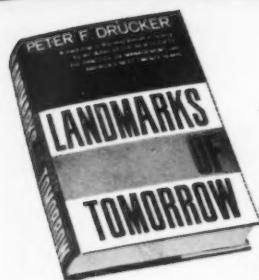
Neo-Machians, however, see science as capable of describing but not explaining, and they comprise a sizable proportion of today's scientists. For them "purpose" is as teleological—as strongly implies some behind-the-scenes Mover—as "cause." Drucker's reassurance that "Our purpose . . . is not metaphysical but physical, it is not purpose of the universe, but purpose in the universe" (pp. 7-8) would probably be of little comfort to them.

The reason for the strong case Drucker makes for purpose is his choice of example: biology (he makes especial reference to Sinnott's *The Biology of the Spirit*, mentioned in our Winter issue Book Notes). But according to Gibbs' concept of entropy (the second law of thermodynamics, growing out of probability theory), life is only a local enclave, or island, in the general tendency toward disorganization. (Within recent years it has become apparent that the laws of modern science are similarly only enclaves in this ultimate trend toward disorganization. The laws of probability theory currently so useful for the physical sciences draw order out of disorder; in the biological sciences order characteristically proceeds from order.)

Erwin Schrödinger (Nobel prize-winning originator of wave theory) attempts to come to grips



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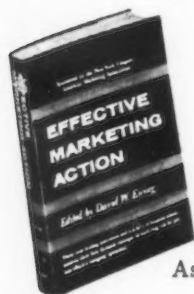
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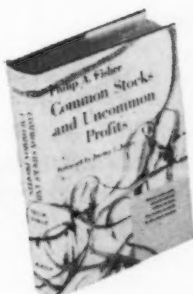
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with the resulting unfortunate difference between the working principles of physicists and biologists in his essay "What Is Life?" He believes, for example, that physicists can contribute to the field of biology if they can adjust their thinking to the anomaly of the order-from-order interplay of atoms in the organism after having been so thoroughly imbued with the laws of physics and chemistry, which are statistical throughout.

Even disregarding this enclave of order-from-order within a general universe of increasing disorder, the strictest positivist must believe with what amounts to true faith that some orderliness underlies all description in the sense that the description of past events has some validity for the future.

It seems unlikely, though, that scientific consensus would be found for Drucker's key statement on "The Purposeful Universe." He quotes, for example, Sinnott's "Life is the imposition of organization on matter" and continues: "It is this arrangement in contemplation of the purpose of the whole that we mean today when we talk of 'order.' This universe of ours is thus once again a universe ruled by purpose—as was the one which the Cartesian world-view overthrew and replaced three hundred years ago." (p. 7) We might remark here, apropos of this quote, that Drucker, from place to place in his book, is given to a certain extravagance and carelessness of expression that mars what are otherwise penetrating insights.

The second formulation of the old Cartesian world-view ("I know what I can measure"), says Drucker, implies a static quality in nature—that is, the thing being measured will remain unchanged during the measuring—and, as

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this implies, the measurer in no way affects the thing being measured. This view has been radically changed by recent work in nuclear physics as well as in biology. Now all is process, and irreversible process at that. The thing be-

ing measured is changing in "self-generated" ways—as well as by the interference of the process—during the measuring, so that the analysis is mainly of historical interest by the time it is finished.

In reducing the contemporary

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whether at some point before it suddenly becomes inoperative, the scientists' faith in order will be justified, and he will have scaled another barrier to his understanding.

WE WOULD LIKE to recommend a few recent works that give more fully the flavor of this scientific soul-searching. We have already pointed to the position of Norbert Wiener (professor of mathematics at M.I.T.). In his *The Human Use of Human Beings* (Anchor), he describes the situation in these terms:

"... physics now no longer claims to deal with what will always happen, but rather with what will happen with an overwhelming probability ...

"One interesting change that has taken place is that in a probabilistic world we no longer deal with quantities and statements which concern a specific, real universe as a whole but ask instead questions which may find their answers in a large number of similar universes. Thus chance has been admitted, not merely as a mathematical tool for physics, but as part of its warp and weft.

"This recognition of an element of incomplete determinism, almost an irrationality in the world, is in a certain way parallel to Freud's admission of a deep irrational component in human conduct and thought. ... in their recognition of a fundamental element of chance in the texture of the universe itself, these men are close to one another and close to the tradition of St. Augustine. For this random element, this organic incompleteness, is one which without too violent a figure of speech we may consider evil; the negative evil which St. Augustine characterizes as incompleteness, rather than the positive malicious evil of the Manichaeans." (pp. 10-11)

Wiener concludes that science is impossible without faith—not, however, a faith that is religious in any ordinary dogmatic sense, but the faith that, although no amount of demonstration can ever prove it, nature is subject to law.

This need for faith in science

is equally true, he says, for a purely causative world and for one in which probability rules. Purely objective and disconnected observation cannot demonstrate that probability is a valid concept. He puts this in other language when he states that the laws of induction in logic cannot be established inductively. "Inductive logic, the logic of Bacon, is rather something on which we can act than something which we can prove, and to act on it is a supreme assertion of faith." (p. 193)

In *What Is Life? And Other Scientific Essays* (Anchor) by Erwin Schrödinger, there is an essay called "On the Peculiarity of the Scientific World-View" in which he stresses that science is "thinking about the world in the Greek way." He quotes John Burnet as concluding "That is why science has never existed except among peoples who came under the influence of Greece." (p. 178) The two basic derivations, Schrödinger says, from Greek influence are:

- "(a) the assumption that the course of natural events can be understood (hypothesis of comprehensibility);
- (b) exclusion of or dispensing with the cognizing subject ... , who steps back into the rôle of an external observer (objectivation)." (p. 182)

But as Schrödinger cautions, the two are really indivisible, for "comprehensibility is bought at the price of letting the subject recede, which makes objectivation possible." (p. 184) He supports his case with two quotations: one by A. S. Eddington, renowned physicist and astronomer,

"In the world of physics we watch a shadowgraph performance of the drama of familiar life. ... The frank realization that physical science is concerned with a world of shadows is one

world-view to pattern, purpose, and process, Drucker here has smoothed over much of the agony that is being expended on how much further we can go with our science on the simple assumption that it works and on the question



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of the most significant of recent advances." (p. 213)

and one by Charles Sherrington, the famous British physiologist,

"Mind, for anything perception can compass, goes therefore in our spatial world more ghostly than a ghost. Invisible, intangible, it is a thing not even of outline; it is not a 'thing.' It remains without sensual confirmation, and remains without it for ever.

"One of the two [continues Schrödinger] thus seems irrevocably doomed to a ghostlike existence, either the objective external world of the scientist, or the self of consciousness which by thinking constructs the former, withdrawing from it in the process." (p. 214)

And finally, in relation to values, meaning, and purpose of this scientific world-view inherited from the Greeks:

"Nature does not act according to purpose. If we speak of purposeful adaptation of an organism to its environment, we know that it is only a convenient figure of speech. If we take it literally we err. We err in the framework of our world-picture, in which there are only strictly causal connexions.

"Least of all can we detect a meaning of *the whole* by purely scientific examination. The closer we look the more meaningless it appears. The spectacle which is enacted evidently obtains a meaning only in relation to the contemplating mind. But what science tells us about the character of this relation is without rhyme or reason: . . ." (pp. 227-28)

A less analytic and more readable exposition of Schrödinger's sense of the "peculiarity of the scientific world-view" is found in another essay in the same book (*What Is Life?*), "Nature and the Greeks."

The controversy over "purpose" seems to be largely semantic when we compare this quotation with Wiener's chapter on "Progress and Entropy," in which he talks about purpose in this way:

"The result of this pruning [the process of natural selection in evolutionary theory] was to leave a residual pattern of forms of life more or less well adapted to their environment. This residual pattern, according to Darwin,

assumes the appearance of universal purposiveness.

"The concept of a residual pattern has come to the fore again in the work of Dr. W. Ross Ashby. He uses it to explain the concept of machines that learn. He points out that a machine of rather random and haphazard structure will have certain near-equilibrium positions, and certain positions far from equilibrium, and that the near-equilibrium patterns will by their very nature last for a long time, while the others will appear only temporarily. The result is that in Ashby's machine, as in Darwin's nature, we have the appearance of a purposefulness in a system which is not purposefully constructed simply because purposelessness is in its very nature transitory. Of course, in the long run, the great trivial purpose of maximum entropy will appear to be the most enduring of all. But in the intermediate stages an organism or a society of organisms will tend to dally longer in those modes of activity in which the different parts work together, according to a more or less meaningful pattern.

"I believe that Ashby's brilliant idea of the unpurposeful random mechanism which seeks for its own purpose through a process of learning is not only one of the great philosophical contributions of the present day, but will lead to highly useful technical developments in the task of automatization. Not only can we build purpose into machines, but in an overwhelming majority of cases a machine designed to avoid certain pitfalls of breakdown will look for purposes which it can fulfill." (pp. 37-38)

There is an additional reason for recommending the Wiener book to those concerned with research management. It affords some valuable insight not only into the thinking of the scientist but, of more pertinence here, into the personality of the scientist.

One can see from the foregoing quotations that the new world-view is far from clear-cut in the statements of the scientists themselves, and the more one compares, even within the writings of the same author, the more discrepancies and stubborn incon-

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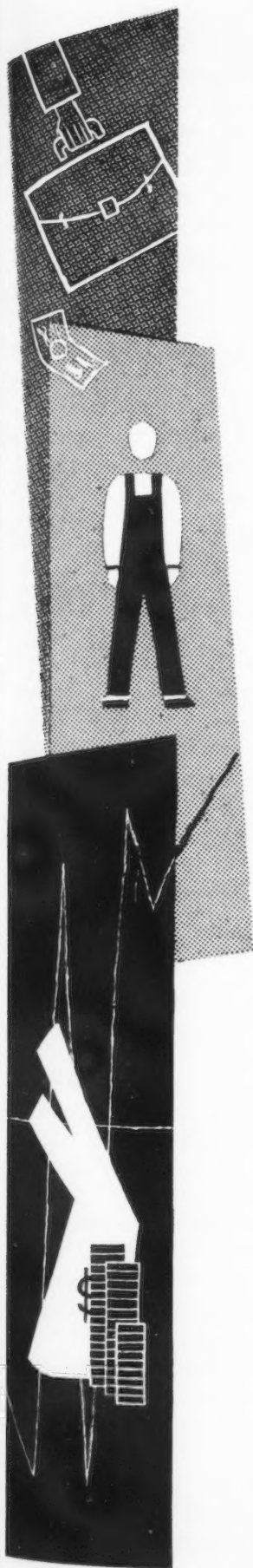
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sistencies appear. This is the principal reason, of course, for the inclusion here of so many quotations: to give the exact statements of varying views. Even so, it is difficult to pull out truly representative ones and to avoid distorting by tearing them from context. For that reason, these books are highly recommended for reading in their entirety.

Before we leave the subject of the new world-view that forms the structural theme of Drucker's new book, however, we would like to mention two more recent works on this subject and a provocative article in the *Saturday Review*.

A work that, judging by several

recent reviews, is as puzzling as it is interesting, is *Accent on Form: An Anticipation of the Science of Tomorrow* by Lancelot Law Whyte (Harper). Oddly, this second volume in the World Perspectives series is only now being reviewed in such places as the *Bulletin of the Atomic Scientists*, although its publication date was 1954.

Whyte sees a tendency, since the time of the Greeks, for thinkers to fall into two camps: the Atomistic School and the Holistic School (Drucker also refers to Smuts, author of *Holism and Evolution*, a very controversial work among scientists today). So far, he says, the atomists have held

the day in science, but between 1925 and 1932 physical atomism began to crumble. It is being replaced by a "New Look at nature," called by Whyte the "Structural School," which seeks "to identify the effective pattern of relationships in some natural phenomenon or mathematical system." (pp. 57-58)

The strength of this attitude, he points out, is its objectivity founded on the desire to eliminate the inherited irrelevant and to retain only what is necessary and sufficient to cover the facts.

Its weakness is the extension of its objectivity into an exaggerated skepticism, caution, and reliance on disconnected observation. The

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Structural School can succumb to the danger of thinking that the elimination of error and prejudice and the collection of facts are the sole goals of science. But, he adds, we can only know that we are rid of an error when we can proceed to a simpler and more comprehensive truth. Furthermore, the idea must precede its justification.

Whyte feels that an important element is therefore lacking in this doctrine—an element easy to describe but difficult to justify.

"The task of science is not merely to identify the changing structural pattern in everything, but to see it as simple. . . . Science is in a bad way when it is necessary to try to explain to a skeptic the meaning of 'simple.' For all intellectual processes depend

on the operation of the aesthetic sense which recognizes an elegant ordering when one is presented to it. This sense is prior to reason and cannot be justified by analysis or interpreted by definitions." (pp. 58-59)

Related to this approach is that of an article in the February, 1959 issue of *Bulletin of the Atomic Scientists* called "Mathematics and the Arts" by Marston Morse, professor of mathematics at Princeton's Institute for Advanced Study. (This article originally appeared in the *Yale Review*.) In talking about what he calls the "psychology of creation," he says:

"The first essential bond between mathematics and the arts is found in the fact that discovery in mathematics is not a matter of logic. It is rather the

result of mysterious powers which no one understands, and in which the unconscious recognition of beauty must play an important part. Out of an infinity of designs a mathematician chooses one pattern for beauty's sake, and pulls it down to earth, no one knows how. Afterwards the logic of words and of forms sets the pattern right. Only then can one tell someone else. The first pattern remains in the shadows of the mind." (pp. 56-57)

Incidentally, Morse sees the modern dilemma as a struggle between algebra and geometry, with the latter on the upswing. And in an author's note to physicists, he concludes:

"One cannot believe that the mathematical forms chosen to represent experimental fact are always uniquely determined by the empirical data. . . .

"There is here a tension between

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- R. H. S. Crossman*, *CHARM OF POLITICS* (Harper)
- Merle Curti*, *MAKING OF AN AMERICAN COMMUNITY: A CASE STUDY OF DEMOCRACY IN A FRONTIER COUNTY* (Stanford)
- Herman L. Donovan*, *KEEPING THE UNIVERSITY FREE AND GROWING* (Univ. of Ky.)
- Mircea Eliade*, *COSMOS AND HISTORY: THE MYTH OF THE ETERNAL RETURN* (Harper)
- Nancy and Temple Fielding*, *SELECTIVE SHOPPING GUIDE TO EUROPE* (What and where to buy in every major European city; Morrow)
- Benjamin Ginzburg*, *REDEDICATION TO FREEDOM* (S. & S.)
- Norman A. Graebner* and others, *THE ENDURING LINCOLN* (Lincoln Sesquicentennial Lectures, Univ. of Ill.)
- E. Hagemann* and others, *TODAY'S IDEAS* (28 essays, Prentice)
- Ernest B. Harper* and *Arthur C. Dunham* (eds.), *COMMUNITY ORGANIZATION IN ACTION: BASIC LITERATURE AND CRITICAL COMMENTS* (Association)
- Arnold Hauser*, *PHILOSOPHY OF ART HISTORY* (Knopf)
- Oscar Kraines*, *CONGRESS AND THE CHALLENGE OF THE BIG GOVERNMENT* (Bookman)
- Walter Leibrecht* (ed.), *RELIGION AND CULTURE: ESSAYS IN HONOR OF PAUL TILLICH* (Harper)
- Marion C. Link*, *SEA DIVER: A QUEST FOR HISTORY UNDER THE SEA* (Rinehart)
- Bert J. Loewenberg*, *WALLACE, DARWIN, AND THE THEORY OF NATURAL SELECTION* (Taplinger)

the aesthetically simple, and the mathematically general (sometimes less simple). One has to learn how properly to resolve this tension. But first of all one must admit the uncertainty and seek to understand it. To the extent to which there is a multiplicity of mathematical forms *a priori* available to express an empirically anchored physical law, to that extent one must call on further experimental evidence, or logic, or aesthetic judgment.

"At stake is not only truth, but freedom. Such freedom of choice as exists must be acknowledged and comprehended, or else it is lost. In a milieu in which freedom of hypothesis is well understood the likelihood of intuitive discovery of high order will certainly be increased. The satisfactions of the physicist and the artist may be combined." (p. 59)

To return to Whyte, he offers a definition of form for those who desire a more rigorous formulation: "The terminus of any formative process [leading from disorder to order], requiring fewer independent parameters to represent it than earlier states, that is, a well-ordered arrangement." (p. 198) He sums up his view of the situation by saying that nothing in our knowledge of nature or in human history excludes the possibility that some formative principle such as he foresees may provide the clue to the three current scientific frontiers: the needed theory of the fundamental particles; the understanding of biological organization; and the working of the human brain. For the development of this principle, the chief need is greater immediacy in thought.

"Immediacy is difficult to achieve. Once the sails of the mind have taken the winds of abstraction, we are lost in a Pythagorean dream and are condemned to ultimate frustration. Our vitality can only be adequately expressed, and the deeper natural order discovered, by a return to immediacy.

"This was not always so. There was a long period in the history of the human mind in which further abstractions were necessary and effective. But

that voyage away from the immediate facts may be near its end. We must now return to ourselves and our experience. Social health, personal balance, and intellectual order can only be recovered by bringing thought and experience into closer relation to each other and to the vitality from which both spring.

"The recovery of immediacy in rational thought implies its restoration from a condition of abstraction and isolation to its true place as a phase in the transformation of feeling into action. When thought is completely abstract its relation to the organic situation is lost. It has to be brought back into place so that we can visualize our thoughts, feel them in their relation to our own impulses, and live them out in action." (pp. 181-82)

One of the briefest and clearest statements of the new views appeared recently in the *Saturday Review* (January 3, 1959) in an article called "A Scientist Ponders Faith" by Warren Weaver, vice-president for the natural and medical sciences of the Rockefeller Foundation. Despite its brevity and clarity, however, it is deeply biased with pessimism in comparison with some of the foregoing.

Weaver finds that "We keep, in science, getting a more and more sophisticated view of our essential ignorance." (p. 9) He starts by describing the now-familiar assumptions of the scientist's "faith"—that there is orderliness and comprehensibility; that even when constructed on probability, there is meaning in the statements of science; and that "the whole quantitative time-space-mass-energy set of concepts which have been developed within the Greco-Judaic system is capable of capturing the variety and subtlety of nature." (p. 8)

The bitterest truth for him is that the basic logical nature of scientific reasoning, long considered unassailable, has been found, while practical, "infected, at the very core, with imperfection."

(p. 33) He refers to the "shocking discoveries concerning deductive logic" recently made by Kurt Gödel. He then refers to the history of criticism of inductive logic, concluding with a recommendation of an article in *Science* by Israel Scheffler on the recent work of N. Goodman. On the basis of this, he says, "The ability of induction to deal with a future case thus collapses; and since this is the only useful aspect of induction, we are faced by total collapse." (p. 10)

While concluding that religion is superior to science (since it has had throughout history to make fewer adjustments on the basis of experience), he does grant science the virtue of utility.

One of the latest books on the new world-view is **THE WAY THINGS ARE** by physicist Percy W. Bridgman (Harvard). Bridgman feels that the trouble derives from the assumption of objectivity. All proof, he believes, is relative and knowledge is naturally

uncertain. From this he develops his idea of "operationalism," which he summarizes in this way:

"In the end, when we come to the places where human weariness and shortness of life forces us to stop analyzing our operations, we are pretty much driven to accept our primitive operations on the basis of feeling in our bones that we know what we are doing."

Drucker, to come back to *Landmarks of Tomorrow*, refers to only Whyte and Schrödinger (of the above scientists), and in consequence his views reflect theirs to a significant degree.

He links his discussion of the new world-view with the practical in this way:

"The people working in a given discipline see the new process and configuration concepts; indeed, they often see little else. But for rigorous work they have only methods based upon the old world-view and the old concepts, methods which are quite inappropriate to the new vision.

"In the social sciences this lag shows itself in the glaring discrepancy between the talk of 'culture,' 'personality'

or 'behavior' and the inability to produce much more than vast collections of empirical data about particular—and by definition meaningless—manifestations.

"In a discipline that is much closer to my own daily interest, the study of management, the situation is equally frustrating. The discipline only exists because we have configuration concepts such as 'business enterprise' and 'the process of managing.' All of us stress that the really important things are process-characteristics, such as the climate of an organization, the development of people in it, or the planning of the nature and purposes of a business enterprise. But whenever we try to be scientific we are thrown back either on purely mechanistic and static methods, such as work measurement of individual operations, or at best on organization rules and definitions." (pp. 11-12)

Before quitting this subject, we would like to make note of a review by Professor Wilson in *Business Horizons* (Summer, 1958, p. 124) of Kenneth Boulding's *The Image*, which Drucker here calls the "latest and most persuasive expression of the new view." (p. 11)

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The true irony of science today apparently is that, at a time when it is enjoying a tremendous prestige in the practical world of technology, it is battling desperately for prestige among its own fellows. And when the age is accused of anti-intellectualism, this does not mean it is opposed to all kinds of knowledge but to a too-great dependence on abstracted intellect. This is nowhere more evident than in contemporary enthusiasm for existential philosophy and psychology and Zen Buddhism (the current rage of beatnik and cocktail set alike). These we will discuss later (together with recommended read-

ing) when we look at Drucker's thesis of the "vanishing East."

Although, Drucker says, there is great confusion (because of the new view) in our thought and belief about the inevitability of progress, we practice an affirmative action through innovation, which is an imaginative process of creating order by taking risks through the use of scientific tools. No longer are our institutions organs of preservation but organs of innovation.

It is in the chapter on innovation, however, that we find most contradiction. How much of the imagination, the creativity for innovating can be the product of

teamwork and how much the flash of genius? At one point he says:

"Innovation adds; it does not replace. It cannot and will not take the place of the creative act, of the 'Eureka' of sudden insight by the genius." (p. 31)

Earlier, he has implied that innovation, basically systematic and collective, *can* produce such insight:

"Today we increasingly believe that there is a conscious discipline—already learnable though perhaps not yet teachable—for the imaginative leap into the unknown. We are developing rigor-

#### FOR THE INFORMED READER

- Félix Marti-Ibanez, M.D.*, MEN, MOLDS, AND HISTORY (M.D. Publications)
- John B. Martin*, THE PANE OF GLASS (Report on mental health, Harper)
- Arno J. Mayer*, POLITICAL ORIGINS OF THE NEW DEMOCRACY (Yale)
- Millett*, GOVERNMENT AND PUBLIC ADMINISTRATION: THE QUEST FOR RESPONSIBLE PERFORMANCE (McGraw)
- Theodore Minnema*, THE SOCIAL ETHICS OF REINHOLD NIEBUHR (Eerdmans)
- H. Richard Niebuhr*, KINGDOM OF GOD IN AMERICA (Torchbooks)
- Reinhold Niebuhr*, ESSAYS IN APPLIED CHRISTIANITY (Meridian)
- Paul Christopher Perrotta, O.P.*, POPE JOHN XXIII: HIS LIFE AND CHARACTER (Nelson)
- Sylvester Petro*, POWER UNLIMITED (Study of McClellan Committee Report, Ronald)
- Karl R. Popper*, THE LOGIC OF SCIENTIFIC DISCOVERY (Basic Books)
- Marie I. Rasey* and others, THE NATURE OF BEING HUMAN (Edmund W. Sinnott, Wm H. Brown, Ralph Rabinovitch, Ashley Montagu, and Rasey; Wayne State)
- Jean Rostand*, CAN MAN BE MODIFIED? (Basic Books)
- Albert Schweitzer*, LIGHT WITHIN US (Philosophical)
- Donald E. Smith*, NEHRU AND DEMOCRACY: THE POLITICAL THOUGHT OF AN ASIAN DEMOCRAT (Longmans)
- Ruben A. Stirton*, TIME, LIFE, AND MAN: THE FOSSIL RECORD (Wiley)
- Earl E. Thorpe*, THE DESERTION OF MAN: A CRITIQUE OF PHILOSOPHY OF HISTORY (Deals with Toynbee, Spengler, Berdyaev, Sorokin, and others; Harrington)
- Richard M. Titmuss*, ESSAYS ON "THE WELFARE STATE" (Yale)
- Alfred Vagts*, HISTORY OF MILITARISM (Meridian)
- Barbara Ward*, FIVE IDEAS THAT CHANGE THE WORLD (Norton)
- Morton White*, RELIGION, POLITICS, AND THE HIGHER LEARNING: A COLLECTION OF ESSAYS (Harvard)
- W. P. Witcutt*, THE RISE AND FALL OF THE INDIVIDUAL (Macmillan)
- Roland Young*, THE AMERICAN CONGRESS (Harper)
- A. W. Zelomek*, A CHANGING AMERICA: AT WORK AND PLAY (Wiley)

#### LATE SPRING

- Morton Beckner*, THE BIOLOGICAL WAY OF THOUGHT (Received Columbia Univ. Clarke F. Ansley

- Award; Columbia)
- Henry K. Beecher*, EXPERIMENTATION IN MAN (Thomas)
- G.A.W. Boehm and Editors of FORTUNE*, THE NEW WORLD OF MATH (Dial)
- Faubion Bowers*, BROADWAY, USSR (On entertainment arts of USSR, Nelson)
- Arnold Brecht*, POLITICAL THEORY, THE FOUNDATIONS OF 20TH CENTURY POLITICAL THOUGHT (Princeton)
- R. L. Bruckberger*, IMAGE OF AMERICA (Viking)
- Mario Bunge*, CAUSALITY: THE PLACE OF THE CAUSAL PRINCIPLE IN MODERN SCIENCE (Harvard)
- James Burnham*, CONGRESS AND THE AMERICAN TRADITION (Regnery)
- Edmond Cahn*, THE MORAL DECISION: RIGHT AND WRONG IN THE LIGHT OF AMERICAN LAW (Indiana Univ.)
- John C. Caldwell*, FAR EAST TRAVEL GUIDE (John Day)
- T. R. Carskadon and George Soule*, U.S.A. IN NEW DIMENSIONS (Twentieth Century Fund)
- William H. Chamberlin*, THE EVOLUTION OF A CONSERVATIVE (Regnery)
- Sydney Chapman*, YEAR OF DISCOVERY: THE STORY OF THE I.G.Y. (Univ. of Mich.)
- Bud Clifton*, POWER GODS (Pyramid)

ous method for creative perception." (p. 28)

And later:

"What is new is only that we are becoming capable of doing systematically what before has usually been a streak of lightning, and that we can organize ordinary mortals to do what before could usually be done only by the rare genius." (p. 32)

This idea of organizing for the creative insight is certainly diametrically opposed to Morse's psychology of creation referred to earlier! The one sentence perhaps bears repeating now, "In a milieu in which freedom of hypothesis is well understood the

likelihood of intuitive discovery of high order will certainly be increased." This, of course, was the crux of the argument in *The Organization Man* against the comprehensive efficacy of the committee or team.

Throughout Drucker's discussion of the new organization (developing in government, education, business, professions, labor alike) there is a great deal of ambivalence. He distrusts central planning at the same time he exalts organization; he insists that the new organization is constituted of human beings for the creation and satisfaction of human values in a society "beyond col-

lectivism and individualism"—while he demonstrates a penchant for military metaphors and urges a subservience of knowledge and education to the organization.

By and large he develops an answer to the growing amount of criticism of the burgeoning bureaucracy that to many foreshadows Orwell's 1984—what Kenneth Boulding has called the brontosaurus in the great forest of society. At best they feel it gives rise to the Organization Man and at worst to Seidenberg's Post-Historic Man (who is completely dehumanized).

In some of his best, though to

Charles de Gaulle, *UNITY 1942-44* (Vol. 2 of memoirs, S. & S.)

Benjamin DeMott, *BODY'S CAGE* (Little, Brown)

John Dickinson, *ADMINISTRATIVE JUSTICE AND THE SUPREMACY OF LAW IN THE UNITED STATES* (Russell & Russell)

Milovan Djilas, *ANATOMY OF A MORAL* (Praeger)

Arthur Drexler, *WHAT IS MODERN ARCHITECTURE?* (Mus. of Mod. Art)

Mario Einaudi, *ROOSEVELT REVOLUTION* (Harcourt)

Merle Fainsod and others, *GOVERNMENT AND THE AMERICAN ECONOMY* (Rev. ed., Norton)

Harold E. Fey and D'Arcy McNickle, *INDIANS AND OTHER AMERICANS: TWO WAYS OF LIFE MEET* (Harper)

H. Bentley Glass, *SCIENTIFIC PROGRESS AND EDUCATION* (La. State)

John C. Greene, *DEATH OF ADAM: EVOLUTION AND ITS IMPACT ON WESTERN THOUGHT* (Iowa State)

S.I. Hayakawa (ed.), *OUR LANGUAGE AND OUR WORLD* (Selections from ETC: A REVIEW OF GENERAL SEMANTICS, 1953-58; Harper)

Sidney Hook, *POLITICAL POWER AND PERSONAL FREEDOM* (Criterion)

Sidney Hook (ed.), *PSYCHOANALYSIS, SCIENTIFIC METHOD, AND PHILOSOPHY* (N. Y. Univ.)

René Huyghe, *DIALOGUE WITH THE VISIBLE* (Abrams)

Charles S. Hyneman, *THE STUDY OF POLITICS: THE PRESENT STATE OF AMERICAN POLITICAL SCIENCE* (Univ. of Ill.)

Brian Inglis, *REVOLUTION IN MEDICINE* (Criterion)

Frank R. Kent, *GREAT GAME OF POLITICS* (Smith, Keynes & Marshall)

P. B. King, *EVOLUTION OF NORTH AMERICA* (Princeton)

F. A. Lange, *HISTORY OF MATERIALISM* (Littlefield, Adams)

Emile Langui, *FIFTY YEARS OF MODERN ART* (Praeger)

Willy Ley, *WILLY LEY'S EXOTIC ZOOLOGY* (Viking)

Stephen and Ethel Longstreet, *THE POLITICIAN* (Funk & Wagnalls)

A. C. B. Lovell, *THE INDIVIDUAL AND THE UNIVERSE* (Reith Lectures, Harper)

Philip Marson, *AMERICAN TRAGEDY—OUR SCHOOLS* (Berkshire)

A. Mason and R. Leach, *IN QUEST OF FREEDOM: AMERICAN THOUGHT AND PRACTICE* (Prentice)

Lowell B. Mason, *THE LANGUAGE OF DISSENT* (Individual freedom ver-

sus bureaucracy in U.S.; World)  
C. Wright Mills, *THE SOCIOLOGICAL IMAGINATION* (Oxford)

Malcolm Moos and Francis E. Rourke, *CAMPUS AND STATE* (Johns Hopkins)

Joseph P. Morray, *THE PRIDE OF STATE: A STUDY IN PATRIOTISM AND AMERICAN NATIONAL MORALITY* (Beacon)

Marjorie Nicolson, *MOUNTAIN GLOOM AND MOUNTAIN GLORY: THE DEVELOPMENT OF THE AESTHETICS OF THE INFINITE* (Cornell)

Jane and Theodore Norman, *TRAVELER'S GUIDE TO EUROPE'S ART* (Channel)

John A. Perkins, *PLAIN TALK FROM A CAMPUS* (Univ. of Del.)

O. John Rogge, *WHY MEN CONFESS: FROM THE INQUISITION TO BRAINWASHING* (Nelson)

Harold Rosenberg, *THE TRADITION OF THE NEW* (Horizon)

Richard Rovere, *SENATOR JOE MCCARTHY* (Harcourt)

Henry Savage, Jr., *SEEDS OF TIME: THE BACKGROUND OF SOUTHERN THINKING* (Holt)

A. B. Schuster, *ART OF TWO WORLDS* (Praeger)

Paul Tabori, *THE NATURAL SCIENCE OF STUPIDITY* (Chilton)

## FOR THE INFORMED READER

- Philip Taft*, A. F. OF L. FROM THE DEATH OF COMPERS TO THE MERGER (Harper)
- Jurgen Thorwald*, THE TRIUMPH OF SURGERY (Pantheon)
- Paul Tillich, THEOLOGY OF CULTURE: SELECTED ESSAYS (Oxford)
- Arnold J. Toynbee*, HELLENISM: THE HISTORY OF A CIVILIZATION (Oxford)
- Stanley Ulanoff*, ILLUSTRATED GUIDE TO U.S. MISSILES AND ROCKETS (Doubleday)
- W. Lloyd Warner, THE LIVING AND THE DEAD (Study of symbolic life of Americans, Yale)
- Earl Warren, JUSTICE FOR HUMANITY: EARL WARREN SPEAKS (S. & S.)
- Frank Lloyd Wright, YOUNG IDEA: AN ANTHOLOGY OF READINGS FOR A LIBERAL EDUCATION (Horizon)

## SUMMER

- Whitney Balliett, JAZZ IN AMERICA (Dutton)
- Douglass Cater, GOVERNMENT BY PUBLICITY (Houghton)
- Arthur C. Clarke, THE CHALLENGE OF THE SPACESHIP: PREVIEWS OF TOMORROW'S WORLD (Harper)
- Irwin D. Davidson and Richard Gehman, THE JURY IS STILL OUT (Harper)
- Eva Fenyp, A GUIDED TOUR THROUGH SPACE AND TIME (Prentice)
- William Harbaugh, THEODORE ROOSEVELT (Farrar)
- Harold M. Hyman, TO TRY MEN'S SOULS: LOYALTY TESTS IN AMERICAN HISTORY (Univ. of Calif.)
- Elizabeth Kaderli and Lt. James Obenauf, BIGGEST THING IN THE SKY (Dutton)
- William Manchester, THE AMAZING ROCKEFELLERS: FROM JOHN D. TO NELSON (Little, Brown)
- Harold R. Medina, THE ANATOMY OF FREEDOM (Holt)
- Ashley Montagu, HUMAN HEREDITY (World)
- Francis P. Shepard, THE EARTH BENEATH THE SEA (Johns Hopkins)
- Victor Zuckerkandl, THE SENSE OF MUSIC (New approach to understanding music, Princeton)

an extent ambiguous passages, he describes the society "beyond collectivism and individualism" thus:

"The traditional view of social order, whether that of collectivism or of individualism, sees society and the individual as restraints or limits on each other. At the best it seeks a compromise between them, through 'concession' to society or to the individual. In the new organization the two are functions of each other . . . The traditional view, so to speak, subtracts society from individual or vice versa; the new organization multiplies the two.

"The more the individual in organization grows as a person, the more can the organization accomplish—the insight underlying all our attention to manager development and advanced manager education today. But, conversely, the more the organization grows in seriousness and integrity, objectives and competence, the more scope is there for the individual to grow and to develop as a person. This is a dynamic rather than a static relationship. It is determined by a future state and future purpose and focused on the growth and development of both." (p. 109)

An article that is more specific in its answer to Boulding's beehemoth and the Organization Man is "Dinosaurs and Personal Freedom" by Harlan Cleveland, dean of the Maxwell Graduate School of Citizenship and Public Affairs at Syracuse (*Saturday Review*, February 28, 1959). The freedom compatible and even necessary to a society based on the large organization is, by his description, not the old personal, limited freedom but a new rather fearful freedom coupled with responsibility (a concomitant also stressed by Drucker) on one hand and prickly with interpersonal relations on the other. An example of the first is the sleepy GI in some far corner of the earth who could accidentally catapult us into an atomic holocaust or the minor member of some foreign mission

who could single-handedly upset relations with the host country. On the second point:

"The larger and more complex the organization, the more necessary it is for more of its members to learn and practice the art of building consent around a personal conviction—and reconciling it with the personal convictions of others." (p. 38)

In a large measure, Cleveland seems to demonstrate, satisfaction is derived mainly from association with bigness and importance.

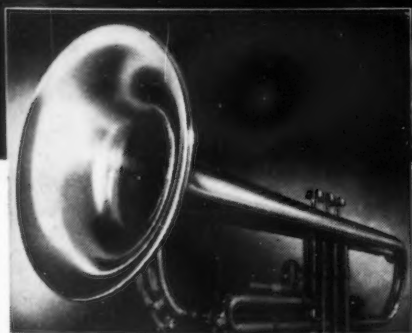
Whether either Boulding or William Whyte would find any comfort here is highly doubtful. They would very probably prefer Drucker's vision, nebulous though it might be.

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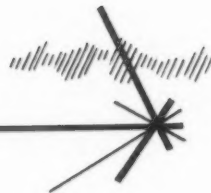
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